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PARALYTIC POLIOMYELITIS

THE EARLY SYMPTOMS AND THE EFFECT OF PHYSICAL ACTIVITY ON THE COURSE OF THE DISEASE

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Attempts to describe the early symptoms and signs of poliomyelitis present considerable difficulties, as the disease may show in many different ways. There are some excellent descriptions of the clinical features of the disease in the literature (e.g., Peabody, Draper, and Dochez, 1912), but recent epidemics have provided many more patients in the older age groups, and these can give a more detailed day-to-day account of their symptoms than has generally been available in the past. This paper is based on the careful questioning of 100 patients (59 males and 41 females) who were convalescent from poliomyelitis, and who were old enough to give a good account of their early symptoms. The number of pure bulbar cases is small, as these patients were often either unfit to be questioned or, having been discharged home after a short period of convalescence, no longer available. The method of recording the features of each case has been described (Russell, 1947), and specially prepared "Paramount" punch-cards were used for further analysis of the material.

The age groups were: under 11, 8 cases; 11–15, 21; 16–20, 17; 21–25, 20; over 25 years, 34.

The onset of the illness was in Great Britain in 85 cases, and in the remaining 15 in West Africa, the Middle East, or the Far East. Of the British cases 83 occurred during the 1947 epidemic, chiefly in the latter half of the outbreak.

Pattern of the Disease

In cases of paralytic poliomyelitis there may be three stages of the disease: the prodromal, the pre-paralytic, and the paralytic stages.

1. *The prodromal stage* is seen in less than half the cases, and precedes the pre-paralytic stage by several days. It consists of a brief and often slight illness lasting one or two days. Fever, sore throat, headache, or nasal catarrh are common symptoms. In most cases there is nothing specific about this stage of the disease, but in a few patients the symptoms of the prodromal stage resemble the spinal symptoms of the pre-paralytic stage.

2. *The pre-paralytic stage* is the acute and critical period of the disease. The virus is now multiplying in the central nervous system, and the battle to decide the fate of the spinal-cord cells is probably over before paralysis is detected. Spinal or meningeal symptoms develop and are often accompanied by fever, malaise, nausea, or vomiting. Pains in the spine, trunk, or limbs (spinal symptoms) are of special diagnostic value, while on examination the neck is stiff and the cerebrospinal fluid shows a marked increase of cells. Many examples of these symptoms are given below, but it must be emphasized that, though the appearance of spinal symptoms is very common, the severity of these symptoms is remarkably variable, and indeed *the pains may be so slight that the robust patient considers them to be negligible.* The pre-paralytic stage usually begins *abruptly*, and in the 100 cases studied 89 had an abrupt onset. These can conveniently be referred to as *"typical" cases.* The cases described as *"atypical"* are those in which the onset was indefinite or in which prodromal symptoms appeared to merge into the pre-paralytic. In some cases the pre-paralytic stage appears in two phases with an interval of perhaps one or two days, during which time the patient feels he has recovered from the worst of the illness. In both these phases the spinal symptoms are often prominent.

3. *The Paralytic Stage.*—A remarkable feature of the paralytic stage is that the patient sometimes feels that he is better and that the illness is passing off, when paralysis appears. In other cases, however, severe limb pains, muscle spasm, and fever continue for many days.

Abortive cases are those in which no paralysis appears. There may merely be a short prodromal stage with perhaps sore throat and fever, or there may, on the other hand, be a pre-paralytic stage with spinal pains and characteristic changes in the cerebrospinal fluid. When there is only a prodromal stage the diagnosis of poliomyelitis virus infection can be little more than a guess, but when a typical pre-paralytic stage develops the diagnosis can often be made on clinical grounds with some confidence even though no paralysis occurs.

Prodromal Stage

As has been pointed out, the prodromal stage of the disease usually consists of a brief non-specific illness. In 34 of the 84 "typical" cases there were prodromal symptoms, usually lasting for one to three days and preceding the onset of spinal symptoms by an average of about five days. These symptoms often consist of a period of malaise with perhaps some fever, sore throat, headache, or cold in the head.

Short Prodromal Illness in a "Typical" Case

Case 1 (2).* Schoolgirl aged 17. *Days 1 and 2:*—Sore throat with slight anorexia. Continued to attend school. *Days 3–7.*—Felt well; school as usual. *Day 8.*—Lumbar pain; continued school. *Day 9.*—Lumbar pain less severe in the forenoon. Ballet-dancing for 1½ hours. Lumbar pain worse in the evening, spreading to abdomen. *Day 10.*—Pains worse in back, trunk, neck, and head. Some nausea. Motored 140 miles and felt very ill. *Day 11:*—Pains less severe, but some pain in thighs; fever; restless and sleepless. Trunk muscles became paralysed, and there was weakness of the thighs and left arm.

Three months later there was severe paralysis of the abdominal and trunk muscles.

*The case notes are numbered seriatim and also according to the numbers in the records.

The occasional appearance of neurological symptoms in the prodromal stage is of special interest, as they suggest some invasion of the central nervous system by the virus even at this early stage.

Case with Neurological Symptoms in the Prodromal Stage

Case 2 (64). Female aged 38. *Days 1–3*:—Hyperaesthesia of skin of the abdomen. *Day 4*:—Hyperaesthesia continued; she felt well, and did an exceptionally heavy day's work in the house. *Day 5*:—Acute onset of pain in head and back, fever (102° F. =38.9° C.) and irritability; continued housework all day. *Day 6*:—Symptoms continued. Stayed in bed for half the day. *Day 7*:—Left leg became paralysed.

A month later there was still severe paralysis of the left thigh and trunk muscles. (See also Case 16.)

Pre-paralytic Stage

In considering the symptoms of the pre-paralytic stage of the disease it must first be emphasized that neither the severity of symptoms during the pre-paralytic stage nor the degree of change in the cerebrospinal fluid gives any indication of the severity of ensuing paralysis.

Severe Pre-paralytic Symptoms but no Paralysis

Case 3 (28).—Schoolboy aged 12. No prodromal symptoms. *Day 1*:—Slight headache on waking, but he went to school and played football. That evening he developed severe headache and spinal pains in the dorsal and cervical regions. He vomited and was restless and sleepless that night. *Day 2*:—The symptoms continued. His neck was stiff and his temperature 100° F. (37.8° C.). His body and all his limbs were painful. He was admitted to hospital. *Day 3*:—The cerebrospinal fluid contained 73 cells per c.mm. and 45 mg. of protein per 100 ml.

Complete recovery ensued without paralysis.

As has been pointed out, the pre-paralytic stage is the most critical period of the illness, and it is only in this stage that any serious attempt can be made to recognize the disease before the onset of paralysis. Spinal or meningeal pains are especially important in diagnosis: they were reported in 95 of the 100 cases, and are analysed in Table I. This table shows that though several spinal

TABLE I.—*Analysis of the Spinal or Meningeal Pains as they Appeared in the 95 Cases which Reported these Pains during the Pre-paralytic Stage*

Pains in	Head	Neck	Back (Lumbar or Dorsal)	Back (Sacral)	Shoulders or Scapular Region	Chest or Abdomen	Thighs or Legs
Head	*64*	40	32	8	11	15	15
Neck		*57*	27	10	9	12	15
Back (lumbar or dorsal)			*52*	11	7	12	18
Back (sacral) ..				*23*	4	9	11
Shoulders or scapular region					*13*	4	4
Chest or abdomen						*24*	15
Thighs or legs ..							*31*

symptoms are common no one of them appears in more than two-thirds of the cases.

Pains in the Head

There is nothing specific about the headache when it occurs except that it is rarely intolerable, as it may be, for example, in meningitis: it may consist more of a soreness at the back of the head which is part of a spinal neck pain. Pain in the head appeared on the first day of the pre-paralytic stage in 45 of the 100 cases. In a few instances severe throbbing frontal pain was reported, but generally the headache was relatively insignificant. Study of the head pains may be of value in differential diagnosis, in that a patient who has spinal rigidity without severe headache is unlikely to be suffering from meningitis. Occasionally pain in the head may appear without any of the more common spinal pains, as in the following case. This record also provides an example in which the onset of the pre-paralytic stage was vague and indefinite.

Indefinite Onset of Pre-paralytic Phase with Fever and Headache but No Spinal Pains

Case 4 (39). Male student aged 19. *Days 1–3*:—General malaise; felt progressively more "fed-up." *Day 4*:—Went for a cross-country run (four miles) to try to "work off" his malaise. He did not run easily, getting home with a struggle. *Day 5*:—Attended lectures; no marked symptoms. *Day 6*:—Fever and headache. Walked with difficulty 200 yds. to tell a relative he was ill; returned to bed. *Day 7*:—During the night he felt ill and weak when he got up for a drink. In the morning he was helped to the lavatory, but collapsed on the floor. This was the last time he walked.

Paralysis was almost complete and permanent in both lower limbs and lower trunk.

Spinal Pains

The spinal pains and paraesthesiae provide by far the most characteristic clinical features of the pre-paralytic stage. They were reported in 95 of the 100 cases. They often present features which are highly specific and of considerable interest. The severity of these pains varies greatly, as the following examples show. They are often localized and may have a segmental distribution. The severity of the pain bears no relation to the severity of ultimate paralysis, but the *site* of pain at the onset of the pre-paralytic stage often corresponds to the site of maximum paralysis. For example, in the present series there were 15 cases of paralytic poliomyelitis in which pains in the thighs occurred on the first day of the pre-paralytic stage. In all but one of these, a bulbar case, the paralysis was maximum in, or more often confined to, the lower limbs.

Severe Spinal Pain Preceding Severe Paralysis

Case 5 (50). Lieutenant in the R.N.V.R. aged 23. *Day 1*:—After normal duties as a barrack guard officer and a little cricket practice he developed pain in the neck at about 6 p.m. He slept badly that night. *Day 2*:—The pain in the neck became more severe, and in addition he developed severe sacral pain. This latter symptom made it impossible for him to rest in comfort. The buttocks were hyperaesthetic, so that he could not bear to sit or lie on his back. He went by car to report sick, but his back was so stiff that he had difficulty in getting into the car. He returned to his billet and went to bed, but could not rest; he got out of bed every hour or so to walk about for ten minutes in an unsuccessful attempt to obtain relief. He was sleepless and restless all night, moving continually while in bed in an attempt to get ease. *Day 3*:—Restlessness continued, and he felt very ill. He was removed to hospital in the evening, by which time his legs were rapidly becoming paralysed. There was almost complete and permanent paralysis of all muscles of the lower limbs and severe weakness of abdominal and lower spinal muscles. The upper limbs were very slightly affected.

Severe Spinal Pain Preceding Slight Paralysis

Case 6 (25).—Housewife aged 30. *Day 1*:—Usual household duties. She felt very tired after a half-hour walk in the afternoon. In the evening she developed sacral pain and also a pain in the right lower abdomen when walking. *Day 2*:—She stayed in bed. The sacral pain became severe and caused great restlessness. Pain in the neck developed. *Day 3*:—After a sleepless night the sacral and cervical pains were severe. She vomited frequently in the evening, which necessitated her getting out of bed every half-hour or so. The restlessness also made her feel she would like to get up and move about. *Day 4*:—No change. *Day 5*:—Pains less severe, but there developed pares of the trunk, left thigh, and left leg muscles. Satisfactory recovery occurred during convalescence in all the affected muscles.

A history of *pain in the neck* is difficult to distinguish from stiffness, and the symptom is often more accurately described as a painful stiffness.

Neck Pain in the Pre-paralytic Stage Causing Difficulty with Diagnosis

Case 7 (35).—Male cinema operator aged 16. *Day 1*:—Slight headache in the morning. Work as usual. About 8 p.m. there developed aching pain in the neck which made him disinclined to move his head. *Day 2*:—After sleeping badly the pain in the neck continued; headache returned with some pain in the scapular region. Some vomiting and anorexia also occurred. He rested at home and went to a hospital out-patient department at 6 p.m. Here his neck and spine were examined at length, and he was told to return next day for *x*-ray examination. *Day 3*:—He visited hospital, where he was again examined at length, and finally the *x*-ray examination was cancelled, and a lumbar puncture established the diagnosis. He had now developed such sacral pains that he was unable to lie on his back. He was admitted to hospital that evening, and by then there was paresis of the trunk and left thigh.

Six weeks later there was still paralysis of the muscles supplied by the upper dorsal cord, especially the intercostals. The limbs were not affected.

Neck Pain and Stiffness in Pre-paralytic Phase Followed by Paralysis of Neck Muscles

Case 8 (7).—Schoolgirl aged 11. *Day 1*:—Developed pain and stiffness in neck, but felt quite well. *Days 2 and 3*:—Pain gradually became worse. She continued to attend school, but got into trouble for not working well. She was obliged to hold her neck stiffly. Her father rubbed her neck and wrapped it up with a scarf. *Day 4*:—Neck pain continued, also some fever, and she felt miserable. Attended school as usual. *Day 5*:—Stayed in bed, and this relieved the neck pain. *Day 6*:—Paralysis of neck muscles.

A month later there was almost complete paralysis of neck muscles; no weakness elsewhere.

Pains in Chest, Abdomen, or Thighs

Pains in the chest and abdomen may cause considerable diagnostic difficulty. Some characteristics which these pains may exhibit are apparent in the following records:

Pain in Chest as the Principal Early Pre-paralytic Symptom

Case 9 (10).—Male surveyor aged 43. *Day 1*:—Having suffered from a sore throat for the previous eight days, he now developed a girdle sensation around his chest, which became tender to touch. *Day 2*:—Chest pain continued, with fever, restlessness, and sleeplessness. *Day 3*:—Vomiting and anorexia also experienced. *Day 4*:—Pain in back and legs added to symptoms. Developed weakness of the right arm, trunk muscles, and right thigh.

Ten days later the muscular weakness was slight and recovering rapidly.

Pain in Chest as an Early Pre-paralytic Symptom

Case 10 (34).—A nurse, aged 21, who had been nursing cases of poliomyelitis (night duty) for a month. *Day 1*:—About midday she developed bilateral chest pain, which was aggravated by a deep breath and was associated with hyperaesthesia: she could not bear the touch of bedclothes on her chest. She went on duty in the evening, but was sent to bed about 10 p.m. *Day 2*:—Chest pain ceased and was replaced by severe frontal aching pain in the head and later by severe sacral pain, both of which continued for three weeks after paresis developed. *Day 3*:—Pain in the front of thighs on moving. *Day 4*:—Neck stiff. Weakness developed in left arm, trunk, left thigh, and left leg.

All the affected muscles recovered well within two months.

Severe Abdominal Pain as a Pre-paralytic Symptom

Case 11 (15).—Schoolgirl aged 10. *Day 1*:—Sent home from school with sore throat, fever, and headache. Went to bed. *Day 3*:—Felt well. *Day 4*:—Got up, but was put to bed again on Day 5 as she looked tired. *Day 6*:—Pains in thighs and back. *Day 8*:—Developed unbearable pain in lower abdomen, back, and thighs. Rolling about in agony. Severe vomiting. *Day 9*:—Pains abated. Weakness of thighs and legs appeared, but this was not severe, and had largely recovered within three weeks.

Pain in Trunk on Movement as a Pre-paralytic Symptom

Case 12 (3).—Male machinist aged 25. *Day 1*:—Slight stiffness in back and pain in the head. Did a heavy day's work. *Day 2*:—Ditto. *Day 3*:—Headache worse, and severe pain developed in thighs and a sharp pain in the left side of the chest each time he stepped forward with the left leg. Left leg also ached. *Day 4*:—Vomiting added to the above symptoms. Weakness of abdominal muscles developed. *Day 5*:—Pains ceased, but weakness spread to the thighs and legs.

A month later the left quadriceps was completely paralysed; all the other muscles affected were improving.

Discomfort in Chest and Abdominal Pain as Pre-paralytic Symptoms

Case 13 (44).—Schoolboy aged 16. *Day 1*:—Feeling of constriction in the chest on taking a deep breath. Ran 100 yds. race. *Day 2*:—Pain in right iliac region on bending while playing a rackets match. *Day 3*:—Above symptoms continued. Some malaise. Ran a half-mile race not so well as he expected. *Day 4*:—Severe headache and pain in neck developed; fever, restlessness, and sleeplessness. School in morning. Tennis for half an hour; then reported sick for the first time and was sent to bed. That night he developed rapidly spreading severe paralysis, especially of lower limbs and trunk. A respirator was required for two weeks.

The permanent disability in this case was severe.

Pain in Thighs as a Pre-paralytic Symptom

Case 14 (48).—Accountant aged 27. *Days 1–4*:—Malaise and slight fever. *Day 5*:—Office work as usual. Slight sore throat; temperature normal. At night developed severe pains in both thighs. Walked about for some hours at night to get relief. *Day 6*:—Thigh pains ceased. Temperature 102° F. (38.9° C.). Visited a friend and had difficulty in climbing stairs. Cycled one mile. Sat in a chair for some hours talking to a friend while his legs were gradually becoming paralysed. *Day 7*:—Stayed in bed. By the evening he was completely paralysed from the chest downwards, and this complete paralysis of the lower limbs was permanent.

Spinal Paraesthesia as an Early Symptom

Case 15 (45).—Female clerk aged 29. *Day 1*:—Nasal catarrh for past six days. Now developed pain in the back of the neck and a sensation like "cold water running down the spine." Work in office as usual. *Day 2*:—Same symptoms, with vomiting and fever in addition. Rest at home, but she went out to visit doctor. *Day 3*:—Symptoms less severe; resting at home. *Day 4*:—Felt well; no pain now, but weakness of left arm developed.

A month later the left deltoid was still completely paralysed, but other affected muscles were recovering slowly.

Other Pre-paralytic Symptoms

Vertigo and a visual abnormality due to jerky movements of the eyes may appear early in the pre-paralytic phase when, as Bodian (1948) has shown, the virus is already in the brain-stem. Vomiting is common but seldom severe. It was reported in 29 of the 100 cases.

Nasal discharge, sore throat, diarrhoea, or constipation may occur in the pre-paralytic phase, but, being non-specific, these symptoms are usually of little value in early diagnosis.

Phases in the Pre-paralytic Stage

Several variations in the course of the disease occur which are most easily described by brief case reports. In some

instances it is difficult to ascertain whether or not the prodromal stage is merging with the pre-paralytic stage.

In the pre-paralytic stage of "typical" cases spinal symptoms usually become increasingly severe for two or three days, after which time paralysis appears and the spinal symptoms often subside quickly. In some cases, however, the course of the pre-paralytic stage is erratic and may consist of two or more phases, as in the following examples.

Case 16 (68).—Schoolboy, aged 12, attending a scout camp. *Day 1*:—Frontal headache and a pain over the anterior aspects of both thighs—"like a wire brush being pressed into the flesh." Tired and sleepy. *Days 2 and 3*:—Felt well, but noticed that running about brought back the pain in his head and thighs. Took part in all camp activities. *Day 4*:—Returned home, but still felt unusually tired. Average physical activity. *Day 7*:—Severe pains developed in head, thighs, and knees. He went to bed early, but was wakened at 9 p.m. by a nightmare to find the pains were worse than ever, and there was also abdominal pain. *Day 8*:—Pains continued. Vomiting, retention of urine, and fever—101.4° F. (38.55° C.). Severe paralysis of the left leg and thigh developed.

Case 17 (6).—Schoolboy aged 12. *Day 1*:—Pain in back of neck and back of knees; malaise and shivery feeling. Fever about 101° F. (38.3° C.). In bed for two days. *Day 3*:—Got up, but pyrexia returned. Returned to bed, where he remained for four days. *Days 10–14*:—Living very quietly at home. *Day 16*:—Resumed school. *Day 18*:—Played rugby football match. *Day 19 (evening)*:—Headache and slight vomiting. Temperature 100° F. (37.8° C.). Went to bed. *Day 20*:—Developed pain in back of neck. *Day 21*:—Pains worse; also pain in dorsal spine. Girdle hyperalgesia and retention of urine. The cerebrospinal fluid contained 502 polymorphs, 280 lymphocytes, and 14 endothelial cells per c.mm., and there was 80 mg. of protein per 100 ml. *Day 22*:—Symptoms subsided. Temperature became normal, and no paralysis developed.

Case 18 (79).—Housewife, aged 30, two months pregnant. *Day 1*:—Mild neck stiffness. *Days 2–4*:—Felt well; usual housework. *Day 5*:—Lumbo-sacral pain and worsening of vomiting of pregnancy. *Days 6 and 7*:—Felt better, though vomiting continued. *Day 8*:—Lumbo-sacral pain recurred with greater severity, and there was also pain and stiffness of the neck and pains in both lower limbs. Temperature about 100.4° F. (38° C.). *Day 9*:—Symptoms continued. *Day 10*:—Cerebrospinal fluid contained 124 polymorphs and 117 lymphocytes per c.mm. and 75 mg. of protein per 100 ml. *Day 11*:—Paralysis of lower limbs, trunk, and diaphragm. Respirator required.

This patient died later of pulmonary collapse.

Spread of Paralysis in Two Phases

Case 19 (1).—Housewife aged 33. *Day 1*:—Developed neck pain in the evening. *Day 2*:—Pains also in both shoulders. Some housework. *Day 3*:—Pains worse. Severe headache, restlessness, sleeplessness, and fever. Got up and went to see doctor. *Days 4 and 5*:—Symptoms continued. *Day 6*:—Paralysis of right shoulder and arm. Symptoms subsided. *Days 7 and 8*:—Felt well, but was restless. *Day 9*:—Improvement continued. Got up to have bed made; malaise and vomiting that evening. *Day 10*:—Paralysis spread to involve right thigh, right leg, and right intercostal muscles.

Another remarkable feature of the pre-paralytic stage occasionally observed is that the patient's symptoms may appear to be abating at the time the paralysis develops.

Abrupt Onset of Pre-paralytic Phase, Symptoms Subjectively Subsiding when Paralysis of Nearly all Muscles Developed

Case 20 (29).—Female factory-worker aged 21. *Day 1*:—Wakened with pain in the neck, back, and head. Worked all day in the factory; the journey to work involved travelling for an hour each way. She vomited and noticed something peculiar about her eyes: she thought she might be getting infantile paralysis. *Day 2*:—Slept well but still had pain in the neck, back, and head. She got up and walked (15 minutes) to see her doctor, who told her she had a chill, so she returned home, went to bed, and took castor oil. *Day 3*:—Pains less severe. She remained in bed, and felt rather better. In the evening some friends called, and she sat up in bed talking to them for four hours (6 to 10 p.m.). Within an hour of her friends' leaving she noticed weakness of her limbs. *Day 4*:—By early morning she was totally paralysed and her respirations were failing; when she reached hospital she was severely cyanosed and was at once placed in a respirator. Ten weeks later there was very little recovery, and she was still unable to breathe without the respirator.

Thieffry (1947) has also drawn attention recently to paralysis occurring in some cases after the fever of the pre-paralytic stage has returned to normal.

Atypical Cases

The cases which show no definite onset of the spinal or meningeal symptoms may be conveniently termed "atypical" cases. There were 11 of this type among the 100 cases studied here. The onset of the pre-paralytic phase may appear indefinite when prodromal catarrhal symptoms merge into the spinal symptoms without the usual interval—see Case 9. The day of onset is also uncertain when the spinal symptoms are at first vague (see Cases 4 and 13), or they may continue for so many days before paralysis develops that the pattern of the disease is altered.

Prolonged Pre-paralytic Stage with Indefinite Onset

Case 21 (41).—Housewife aged 28. *Days 1 and 2*:—Tenderness of lower ribs for two days; no pain. *Days 3 and 4*:—Tenderness of upper abdomen for two days; no pain. *Days 5–7*:—Tenderness of lumbar spine for three days. Very light work. *Day 8*:—Tender on the anterior aspect of the right leg for two days. Very light work. *Day 9*:—In the morning sacral pain and stiffness developed. In the evening slight jerks of the right leg occurred with some pain in the leg. *Days 10 and 11*:—Sacral pain continued and slight fever developed.

The sacral pain continued until *Day 17*. The neck was stiff on admission to hospital on *Day 13*. On *Day 15* the cerebrospinal fluid contained 115 cells per c.mm. (10% polymorphs) and 70 mg. of protein per 100 ml. No paralysis developed except perhaps a transient slight paresis of the right leg.

Case 22 (77).—General practitioner aged 38. *Day 1*:—Malaise and headache in the evening. *Day 2*:—Rested at home. *Day 3*:—Listless and shivery; resumed practice. *Day 4*:—No change. *Day 5*:—Strenuous walk over the hills to "shake off" his malaise. *Days 6 and 7*:—Continued his practice, though symptoms persisted. *Day 8*:—Forced to go to bed with fever, severe frontal headache, and pain and stiffness of the neck. *Day 9*:—Excruciating sacral pain added to symptoms. *Day 10*:—Weakness of right arm and leg and later, respiration. *Day 11*:—Respirator required; nearly all muscles paralysed. *Day 12*:—Died.

Discussion of Stages and Phases

Examination of these widely varying case records leads to certain conclusions. (1) Prodromal symptoms are usually non-specific, but sometimes they include spinal symptoms of a type suggesting that the virus is already in the spinal cord. (2) The symptoms of the pre-paralytic stage usually begin abruptly, get worse for 2, 3, or more days, and culminate in paralysis. Subjectively the patient may feel better when paralysis develops. (3) During the pre-paralytic stage the symptoms may abate and the patient feel that he has recovered from the illness, though the symptoms recur more violently and lead to paralysis. (4) Occasionally the paralysis may appear in two distinct phases, with an interval of several days between the first and second. (5) When there are two or more phases to the pre-paralytic stage each phase usually has spinal symptoms of the same type as occur in cases with only one pre-paralytic phase.

The pre-paralytic stage of poliomyelitis is therefore a highly critical time for the patient. Here the battle will

the invading virus reaches its climax. The amount of spinal cord damage must to a large extent be determined at this stage before paralysis actually supervenes. There is clinical evidence from the occurrence of spinal symptoms that in some cases this struggle is already being fought within the central nervous system during the prodromal stage. Experimental studies support this possibility, as Horstmann (1948) has pointed out.

The two or more phases which may occur in the pre-paralytic stage suggest that the body may appear to conquer its foe, but after apparent victory something "goes wrong"; the virus triumphs at the second assault and paralysis results. The sudden triumph by the virus and its simultaneous appearance throughout nearly all parts of the spinal cord and brain-stem is a puzzling feature of experimental poliomyelitis.

According to Bodian (1948) the virus reaches its maximum concentration in the spinal cord twenty-four hours before paralysis, and as the paralysis is advancing the concentration of the virus drops rapidly. Experimental infections do not, however, often run a biphasic course, and one can only speculate on the likely concentrations of virus in the spinal cord at the various stages of a human case with a biphasic pre-paralytic stage.

Effect of Physical Activity on Motor Neurone Vulnerability to the Virus

In the literature of poliomyelitis there are many reports regarding cases in which violent physical exertion appeared to precipitate a severe or fatal paralysis or in which the muscles specially exercised were those most paralysed. Reference to these cases is made by Levinson *et al.* (1945), who have also made observations on the effect of fatigue and cold in increasing the amount of paralysis in monkeys infected with the virus.

In a preliminary report on the present study (Russell, 1947) the effect of exercise upon the final paralysis was examined statistically, and it was shown that the continuance of even moderate physical activity in the pre-paralytic stage is dangerous. Hargreaves (1948) has to a large extent confirmed these observations.

If physical activity has this important influence on the course of the disease it might show its influence in one of three ways: (1) Physical activity might bring on the acute pre-paralytic phase in a patient who would otherwise have an abortive attack with no more than prodromal symptoms or perhaps no noticeable symptoms at all. (2) Physical activity after the onset of pre-paralytic symptoms might increase the risk or indeed determine the amount and site of paralysis. (3) Physical activity after the subsidence of a first phase of the pre-paralytic stage might lead to a recurrence of the meningeal symptoms and thus increase the danger of paralysis.

Excessive Physical Activity Preceding Pre-paralytic Stage

With regard to the first of these possibilities a study of the case records suggests that excessive physical activity may sometimes play a part in deciding the onset of the dangerous pre-paralytic stage. The evidence of this consists merely in a history of extra physical activity within twenty-four hours of the onset of the pre-paralytic stage in 17 of the 100 cases.

The correlation of physical activity with this particular aspect of the disease is difficult to handle statistically, but the following cases certainly suggest that violent physical exertion may sometimes be a factor which determines that a prodromal illness or latent infection will not remain abortive but will develop the spinal symptoms of the pre-paralytic stage with the consequent danger of paralysis.

This possible effect of physical activity in precipitating the pre-paralytic stage of the disease must be clearly distinguished from the effect of physical activity *during* the pre-paralytic stage on the severity of paralysis. This latter aspect can be handled with confidence statistically, and will be referred to later.

Special Physical Activity in Prodromal Stage Followed Within 24 Hours by Acute Spinal Symptoms and Later by Paralysis

Case 23 (89).—Airman aged 33. *Day 1*:—Headache and sore throat; off duty for one day. *Days 2–6*:—Felt well. *Day 7*:—After usual work played rugby football. *Day 8*:—Severe pain in spine and chest with fever. Continued work. *Day 9*:—Severe paralysis of all muscles of the lower limbs and lower trunk.

Case 24 (91).—Airman aged 22. *Days 1 and 2*:—Sore throat and headache. Quiet days on board ship. *Day 3*:—Ashore walking round all day. In evening developed sacral pain. *Day 7*:—Paralysis of abdominal muscles and thighs.

Case 25 (84).—Airman aged 23. *Day 1*:—Cold in head and sore throat for two days. *Days 3–9*:—Tired, but weather very hot. *Day 10*:—Very hard badminton match. In evening developed fever and pain in head and neck. *Day 13*:—Severe paralysis of both upper limbs.

Case 26 (71).—Schoolboy aged 14. Had cold for three or four days. A week later he played rugby football, and on the night following developed pain in the back and a few days later slight abdominal paralysis.

There are four further examples of this type among the group of "typical" cases with prodromal symptoms.

There are also nine among the "typical" cases *without* prodromal symptoms in which the pre-paralytic stage with spinal symptoms was immediately (within two to twenty-four hours) preceded by some special physical activity as in the following examples.

Special Physical Activity Immediately Preceding Spinal Symptoms in "Typical" Cases with No Reported Prodromal Symptoms

Case 3 (28).—Male aged 12. Football six hours before onset.

Case 19 (1).—Female aged 33. Six hours spent washing for a school, extra to usual work, eight hours before onset.

Case 27 (4).—Male aged 13. Long run (several miles) soon after beginning of school term, sixteen hours before onset.

Case 28 (86).—Male aged 22. Tennis tournament all day twenty-four hours before onset. Yachting six hours before onset.

Case 29 (94).—Male aged 21. Tennis tournament twenty-four hours before onset.

Case 30 (90).—Male aged 28. Playing squash-rackets three hours before onset.

Physical Activity During the Pre-paralytic Phase and its Influence on the Severity of Paralysis

In order to correlate the possible effect of physical activity during the pre-paralytic stage with the severity of paralysis a method of scoring has been used for both the amount of physical activity and the severity of paralysis (Russell, 1947).

In Table II the days of the disease are numbered backwards from the day paralysis appeared (P−1, P−2, P−3,

TABLE II.—*Physical Activity on the Days Preceding Paralysis Compared in Cases Developing (1) Slight, (2) Moderate or Severe Paralysis*

Severity of Paralysis	No. of Patients in Each Group who Undertook Moderate or Severe Physical Activity During Each of the Four Days Preceding Paralysis (P−1, P−2, P−3, P−4)			
	P−1	P−2	P−3	P−4
Slight (33 cases)	0	6 (18%)	11 (33%)	18 (54%)
Moderate or severe (59 cases) ..	14 (23%)	35 (59%)	51 (86%)	53 (90%)

and P – 4). The cases are divided into two groups: (1) slight paralysis—good recovery expected; (2) moderate or severe paralysis—permanent disability expected. The proportion of cases in each group which continued physical activity during these four days is shown. It is obvious that non-paralytic cases cannot be included in this table.

Another method of investigating this matter is by numbering the days of the disease from the onset of the pre-paralytic stage; but this can only be done in the "typical" cases with an abrupt onset of spinal symptoms. In Table III

TABLE III.—*Comparison, in "Typical" Cases Only, Between the Severity of Paralysis and the Amount of Physical Activity after the Onset of the Pre-paralytic Stage*

Amount of Physical Activity After Onset of Pre-paralytic Stage	Permanent Paralysis		
	Slight or None	Moderate	Severe or Fatal
Nil or slight for less than 24 hours ..	30	6	2
Moderate or severe for less than 24 hours ..	6	9	7
Slight, moderate, or severe for more than 24 hours	2	12	15
Totals	38	27	24

the ultimate severity of paralysis in the typical cases is compared with the amount of exercise continued after the start of the pre-paralytic stage.

Both Tables I and II show a remarkable and highly significant increase of severe paralysis in association with a continuance of physical activity in the days preceding paralysis.

The question naturally arises why certain patients continue average or severe activities after the onset of symptoms. As has already been emphasized, these symptoms may be quite slight, but there is certainly no evidence to suggest that those patients destined for severe paralysis have less disturbing pre-paralytic symptoms than have the slight cases. The question cannot be answered with great confidence, but my impression is that often those who continue physical activity after the symptoms begin either are relatively insensitive to pain or have more than the average courage or incentive to continue work or play in spite of illness. There is certainly no doubt that many of those most severely crippled have a remarkable strength of character and great powers of endurance. It has been said that the disease picks out the best child of the family.

Many young children pay little attention to bodily pains, and this may explain an apparent absence of spinal pain in some infants developing poliomyelitis.

The Effect of Trauma

There are a few reported cases of poliomyelitis in which local trauma appeared to determine the site of maximum paralysis (see Levinson *et al.*, 1945). In such a case, for example, poliomyelitis occurring soon after an arm fracture would lead to paralysis affecting chiefly the fractured arm. This type of case, infrequent though it is, raises the possibility either that peripheral trauma provides the virus with easy access to the neurones or that it modifies the physiology of the spinal cord cells of the segments concerned in such a way as to make them more vulnerable to the virus.

Experimental studies on these lines provide much food for thought. Hurst (1930) found that injection of the virus into the sciatic nerve led to paralysis beginning in the same leg only if the nerve is deliberately injured by the injecting needle. In such an experiment the paralysis develops without the preceding fever noticed in other forms of experimental infection (e.g., intracerebral). Infection was prevented if the injected nerve was excised within twenty-four hours of injection. Howe and Bodian (1942) found that section of nerve roots some days before infection protected the corresponding nerve cells from attack by the virus. German and Trask (1938) injected virus into denervated skin caused by section of anterior and posterior roots, denervation of a skin flap, or denervation of a whole lower limb from the mid-thigh level. They found that not only did the disease caused by injection into denervated skin develop with the normal pattern, but that the animals infected after these operations were more vulnerable and developed more severe paralysis than the controls. The limbs on the side of the operation were usually affected first. From these experiments it was clear that, though the virus did not have any nerves along which to travel, it reached the spinal cord just as quickly as in the controls, and apparently found that the previous operations had increased the vulnerability of the spinal cord cells in the appropriate segments.

These observations necessitate reconsideration of the theory that the virus travels principally via the neurones. This theory is based on a number of studies. Hurst's work on the sciatic nerve has just been referred to. In the tragic accidents with poliomyelitis "vaccine" reported by Leake (1935) the arm inoculated was always the first to be paralysed. After intracerebral inoculation of the virus paralysis appears first in the contralateral limbs (Jungeblut and Spring, 1930).

Though these observations are generally held to indicate neuronal transmission of the virus, it is also possible that this pattern of spread is due not to the trauma providing neuronal access but to the trauma modifying the physiology and increasing the vulnerability of the spinal cord cells with which the traumatized area is in anatomical neuronal connexion.

The following case records may be relevant to this problem.

T.A.B. Inoculation on Right Arm. Acute Illness 7 Days Later. Paralysis of Right Arm

Case 31 (12).—A newly conscripted soldier aged 18. *Day 1:*—A T.A.B. inoculation was given by subcutaneous injection on the outer side of the right upper arm. The arm was stiff for two days, but he did not feel well during the week following, so he rested most of the time. *Day 7:*—In the evening a painful stiffness of the neck and scapular region developed. There was also anorexia. *Day 8:*—Headache and fever (103° F.= 39.4° C.) were added to symptoms. *Day 9:*—The cerebrospinal fluid contained 133 white cells per c.mm. and 75 mg. of protein per 100 ml. *Day 10:*—Paralysis of right deltoid, biceps, and triceps. No other muscles were affected.

Severe Paralysis of Lower Limbs and Trunk 10 Days After Several Intramuscular Injections in Buttocks

Case 32 (101).—Schoolgirl aged 10. *Day 1:*—Severe earache, for which she was given intramuscular injections of penicillin into the buttocks every four hours for three days. *Day 8:*—Felt tired and had a slight headache on waking. Though her temperature was normal at lunch-time it was raised a little by the evening. Slight activity during the forenoon; then went to bed. *Day 9:*—Slight sore throat added to symptoms. In bed all day. *Day 10:*—Felt quite well. In bed all day except that she got up to motor home—one hour's run. *Day 11:*—Developed moderately severe pains in both thighs. In bed all day. *Day 12:*—Severe paralysis of both lower limbs and lower trunk muscles. This was still very severe two months later.

(Her brother also had pains in the thighs at about the same time, but did not develop paralysis.)

If these two examples record anything more than a remarkable coincidence then they suggest that at a certain early stage of virus infection even the trauma of a

injection will increase the vulnerability of that part of the spinal cord which supplies the site of injection. The well-recognized effect of tonsillectomy on increasing the liability to bulbar palsy may act in the same way (Horstmann, 1948).

Type of Physical Activity Related to Site of Paralysis

There have been many reported instances of the paralysis of poliomyelitis being worse in those muscles which were most exercised at the onset of the illness. Table IV gives

TABLE IV.—*Poliomyelitis. Comparison Between Type of Exercise and Permanent Paralysis*

Case No.	Day of Exercise in Relation to Day of Onset of Pre-paralytic Stage (D) and to Day of Paralysis (P)		Type of Exercise	Site and Severity of Paralysis (Slight +, Moderate ++, Severe +++)
	D	P		
13 (*44*)	3	−1	Half-mile race	Lower limbs +++ Trunk ++
4 (*39*)	−1	−3	Four-mile race	Lower limbs +++ L. arm ++
(*52*)	1	−1	Schoolboy playing organ for 1 hour. R. leg: special strain	R. leg and thigh only +++
70)	1	−1	Throwing chain with R. arm (surveyor)	R. upper limb +++ L. leg ++
(*51*)	3	−1	Severe asthma	Abdomen +++ Intercostals +++ R. shoulder ++ R. thigh ++
(*83*)	1	−3	Playing piano for 1½ hours. R. hand: special strain in the piece played	R. arm and hand only +++
17 (*6*)	1, 2, 3	−2, −1	Milkman—on feet all day	Trunk and thighs+++ Legs +
(*36*)	1 to 7	−7 to −1	Heavy-truck driving	Both lower limbs +++
(*9*)	1, 2	−1, −2	Heavy training; carrying machine-guns uphill 6 hours before paralysis	Universal severe paralysis; respirator; died 3 months later

Cases in which the muscles used most during the pre-paralytic stage were most severely paralysed.

several examples of this correlation between the type of physical activity and the site of maximum paralysis, and thus provides further evidence regarding the harmful effect of physical activity.

Conclusions

These observations help to consolidate views held by many experienced physicians: first, that the pre-paralytic stage of poliomyelitis, though variable, can often be recognized correctly; and, secondly, that physical activity at the onset of the disease is dangerous.

The tables which illustrate this paper indicate that *complete physical quiet from the onset of symptoms will seldom fail to prevent serious paralysis, while strenuous or even moderate physical activity at this stage is highly dangerous.* On theoretical grounds, therefore, it should be possible to prevent many of the grave cases which occur. For example, those who have the care of children, especially at holiday camps and schools, should learn of the ways in which the disease can present. Sports meetings and special athletic contests should, if possible, be held outside the season for poliomyelitis. During an epidemic physical activity should not be exhausting, and should be avoided entirely during minor illnesses. The dangerous idea that symptoms may be "worked off" by exercise should be countered emphatically.

During the acute stage of the disease perhaps the chief aim in treatment should be to maintain for the patient a state of mental and physical quiet. He should be surrounded by an atmosphere of calm and confident efficiency. Sedatives and analgesics are often essential, but little information is available on what are the best sedatives to use in this disease. Probably all sedatives are safe in moderate doses, but patients in the acute stage of the disease must, especially if on sedative treatment, be watched carefully lest respiratory paralysis develop during sleep.

The not uncommon need to rest the muscles of respiration should be kept in mind. Slight respiratory weakness leads to alarm and sleeplessness. Weakness of coughing is an early sign. This can often be relieved by using the artificial respirator for a short time, but in mild cases a *lung inflator* is particularly valuable, and is less worrying to the patient. A lung inflator* can be used to give highly effective artificial respiration for a period of hours if necessary, and should be at hand in all cases of paralytic poliomyelitis during the acute stage of the disease. In respirator cases a lung inflator is especially valuable, as it enables artificial respiration to be fully maintained when the patient is removed from the respirator for nursing and other purposes.

Summary

In 100 cases of poliomyelitis the early symptoms have been studied in detail.

The prodromal stage, when present, consists usually of a brief non-specific illness, but neurological symptoms occasionally appear even at this early stage.

The pre-paralytic stage is the most critical period of the disease. Spinal symptoms in "typical" cases begin abruptly, and occurred in 95 of the 100 cases. They are of great value in diagnosis, but are very variable as regards both type and severity.

Two or more phases of the pre-paralytic stage may appear, and paralysis may spread in two or more stages. The spinal symptoms may subside before paralysis develops.

In "atypical" cases the onset of the pre-paralytic stage is vague, and the symptoms of a prodromal stage may appear to merge into the pre-paralytic stage.

An unusual amount of physical activity immediately preceded the pre-paralytic stage in 14 of the 100 cases.

Complete physical rest in bed from the onset of the pre-paralytic stage greatly reduces the danger of severe paralysis. Severe physical activity at this stage is almost suicidal, while the continuance of even average physical activity is dangerous.

The possible effect of trauma in localizing the disease is considered.

During an epidemic physical activity should be avoided entirely in minor illnesses. The highly dangerous belief that malaise and other vague symptoms should be "worked off" by exercise requires correction.

I am greatly indebted to Drs. R. J. Porter, George Smyth, and Elias-Jones, who between them contributed 34 carefully documented records towards this series of cases. Many have allowed me to study the cases under their care, and in this connexion I am especially grateful to Dr. W. H. Kelleher, Dr. A. Joe, and the Medical Officer of Health for Oxford. Dr. P. M. Daniel, Professor Ryle, and Dr. Allan McFarlan have each given me most valuable criticism of the manuscript. Dr. Weston Hurst has given me much helpful information.

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*The Oxford inflator (Medical and Industrial Equipment, Ltd.) as described in the *Lancet*, 1939, **1**, 206.

THE MIND AND THE SKIN

BY

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In 1884 Jonathan Hutchinson started a series of lectures with the following sentences: "Our forefathers, who knew far less about the detail of pathology than we do, attached far more importance to such matters as temperament and diathesis. They were accustomed to prescribe for a man's temperament; we think only of his disease, and turn aside with weariness from classifications of diathesis in which the physicians of an older day delighted. Although to a large extent this change of sentiment has been the result of advance in knowledge, yet I think it might easily be shown that it has gone too far, and that we now neglect unwisely the study of those differences between man and man of which, for the most part, physiology takes no cognizance, but which may yet prove of much importance in modifying the processes of disease."

That extract is as true to-day as it was 65 years ago. That the skin can portray emotions and give a picture of man's temperament is often overlooked. Ingram in 1933 pointed out that permanent changes can occur in the skin as a result of emotional changes, but it is only recently that this has been generally accepted, and there still exists rock-like opposition in some quarters.

Few would deny that certain emotions are displayed for all to see in the changing responses of the skin. The blush of shame, the flush of anger, the pallor of fear, are commonplace examples of this phenomenon. It is impossible to practise dermatology without realizing that these dynamic changes may produce a permanent change in the skin. However, it is extremely difficult to prove this to the outside observer. Professor Witts (1948) said, "How easy it is to aver that mental ideas or states can be converted into physical disease processes as they can be converted into phobias or hysterical paralyses, but how difficult it is to prove it or to demonstrate the mechanism!"

It is becoming more and more apparent that the onset of any given disease is a result of the interplay of many factors; hereditary predisposition, allergy, bacterial infection, immunity, and mental conflicts all play a part. It is most important that skin disease should be classed as a derangement of the whole body, and not just as an inflamed patch of skin. The mind plays a large part in the production of some of the common skin diseases, but I do not want to give you the impression that I think that all skin disease is produced by derangement of the mind or that if an adequate organic cause can be found it should be neglected.

Here is a brief classification of the skin conditions in which the psychogenic factor plays some part in the causation:

Group 1.—Dermatoses Always Psychic in Origin.—(*a*) Delusion of parasitosis (acarophobia) and other obsessional states. (*b*) Dermatitis factitia. (*c*) Neurotic excoriations. (*d*) Trichotillomania.

Group 2.—Dermatoses with a Large Psychogenic Factor.—(*a*) Neurodermatitis. (*b*) Pruritus ani and vulvae. (*c*) Atopic eczema. (*d*) Nummular eczema. (*e*) Rosacea.

Group 3.—Dermatoses Sometimes Precipitated by Psychogenic Factors.—(*a*) Urticaria. (*b*) Hyperidrosis. (*c*) Cheiropompholyx. (*d*) Seborrhoeic dermatitis. (*e*) Psoriasis. (*f*) Alopecia areata.

Group 1

The cases in this group are of interest in that their aetiology is accepted by most people without much argument. On the whole they are rarities, and therefore I do not want to give much space to them. They include:

(*a*) *Delusion of Parasitosis, or Acarophobia.*—This usually occurs in an elderly person living alone who complains that he or she is infested with imaginary mites which run about his or her body. An old lady who came to me not long ago stated that she had three separate colonies, all different colours, living beneath her toe-nails, in her umbilicus, and in her hair. She produced a screw of paper in which were bits of dust, skin, scales, etc., which she stated were the mites. Her main reason for coming was that she thought people in church could see them and were talking about her. On examination her skin showed no abnormality, though in some cases excoriations are present, as there is often an associated senile pruritus. Her belief of infestation was a delusion, and this was part of an involutional melancholia. Other psychoses may give rise to these delusions, among them toxic states, schizophrenia, and arteriosclerotic paranoia. In this group psychiatric treatment is the only thing possible, and I believe my old lady was helped by electric convulsion therapy.

(*b*) *Dermatitis Factitia.*—These skin lesions are self-inflicted and can be diagnosed by the bizarre characters, which do not fit in with any common dermatosis. Occasionally the lesions are produced consciously for gain, as by the man who wishes to be invalided from the Services or who aggravates an industrial dermatitis to continue to draw compensation. Most commonly, however, the lesions occur in women with a hysterical personality who desire sympathy. Occasionally no apparent reasonable cause can be found, and then it seems to be a true psychosis. I remember very well a woman who ulcerated one leg until it had to be removed; she then started on the other. Fig. 1 shows a typical factitious lesion in a girl of 16. No cause for her action was found by the psychiatrist. Even when confronted with evidence that the lesion heals when covered by an occlusive dressing it is rare to get a confession, and I think psychiatrists agree that these cases are most difficult to cure.

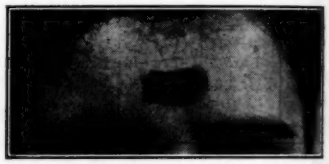

FIG. 1.—Photograph of girl with dermatitis factitia.

(*c*) Closely allied to dermatitis factitia are those rare cases of neurotic excoriations that are usually a result of some trivial organic skin disease which is perpetuated in hysterical individuals by constant scratching.

(*d*) *Trichotillomania.*—The habit of pulling out hair is most commonly seen in children of nervous temperament and in mental defectives.

Group 2

In this group—comprising the dermatoses in which the psychogenic factors play a predominant part—are those patients who crowd the out-patient departments and surgeries. These cases occur in individuals who are born with a constitutional inadequacy of the nervous system. They belong to the same group as those seen in other departments of medicine, with nervous dyspepsia, effort syndromes, irritable colons, anxiety headaches, and the other innumerable psychosomatic syndromes. The fact that they develop a skin abnormality rather than one of the other manifestations seems in many cases to be a matter of chance or rather opportunism.

Neurodermatitis

If one takes the common itching syndrome neurodermatitis, there is often an organic precipitating cause and then the irritable nervous make-up takes over and perpetuates the condition. A typical example follows.

Case 1.—A woman aged 50, obsessionally house-proud and chronic worrier, had brought up her only daughter to be a b above the neighbours and was intensely proud of her. Som six months before she attended the out-patient department he

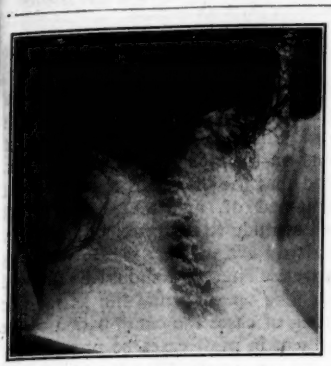

FIG. 2.—Case 1, showing band of neurodermatitis on the neck.

daughter had married a man whom the mother considered unsuitable, and this had led to continual family friction. The mother had become "nervy," prone to outbursts of weeping without due cause, and unable to sleep. She then developed a small boil on her neck which irritated intensely, and she found herself scratching her neck constantly. She would awake at night and find herself scratching. She had always prided herself on her good skin and keeping clean, and the fact that she had this skin lesion, which other people could see, increased her anxiety, and she ceased to meet her friends, as she was ashamed. It was at this stage that she attended hospital. On examination the clinical lesion was a band of lichenified papules with an excoriated surface on the back of her neck (Fig. 2). The lichenification was evidence of long-continued rubbing, and the localized lesion with clear-cut edges was typical of probably the most common psychodermatosis—localized neurodermatitis. It was apparent that there must have been some psychogenic cause, and with only a little encouragement she gave us the whole story.

Here one can see the three main factors: (1) constitutional make-up, (2) acute emotional tension, and (3) an organic lesion—the boil; this led to the production of the lesion, the presence of which caused even more anxiety.

The great majority of these cases of dry localized neurodermatitis have some recent increase in nervous tension on the constitutional nervous state which Becker (1932) called "neuro-circulatory instability." Favourite sites for the lesions are the occiput and nape of the neck, behind the ears, the eyelids, the antecubital fossae, the backs of the arms, the inner side of the thigh, and the vulva and perianal regions.

On the whole the personality type which develops neurodermatitis is the hard-working, over-conscientious, meticulous, overclean, yet aggressive obsessional persons to whom life is a stern battle relieved by a few light touches and who bottle up their emotions.

Stokes (1940) has named this personality the "tension frame of mind," and I think it very apt. These people have an inborn feeling of inadequacy. Their lives are governed by the conflict of "I must" with "I can't" and "I don't want to." These are the women who are aggravatingly house-proud, who boast of never sitting down, who—if advised to stay in bed—say, "Oh, I couldn't rest for a minute." It is a state of diseased conscience. These are the people who love being martyrs, the trouble-borrowers. This temperament plus precipitating increase in anxiety leads to neurodermatitis. Two further examples follow.

Case 2.—A woman aged 29 was just such a personality. For two years she nursed her mother in her last illness. The following year she nursed her father in his last illness. After that she became depressed, unable to concentrate, and prone to attacks of weeping for no apparent reason. Then she began to scratch the back of her neck, producing the condition shown in Fig. 3.

Case 3.—A grinder aged 25 was injured two years previously when a grindstone exploded. He was afraid to return to his job, and developed a "nervous breakdown" and headaches. However, he did return, and in a few months began to scratch his right thigh. On examination he was obviously jumpy, had hyperidrosis of the hands, and admitted that he was scared stiff of his job. There was a large area of neurodermatitis on his right thigh. He clearly understood the explanation of his symptoms, and recovered when his occupation was changed.

While localized neurodermatitis is more common in women, it does occur in men, and I have recently seen it in a boy of 6 who started to scratch when another child was born in the family.

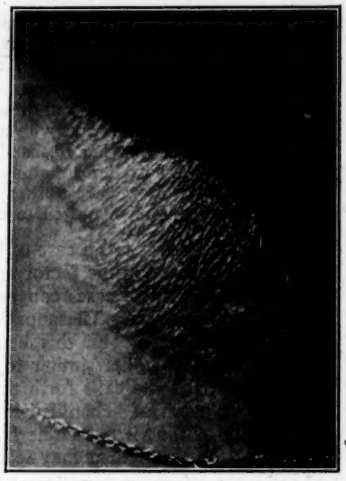

FIG. 3.—Case 2, showing localized patch of neurodermatitis on the neck.

In some cases the site of itching is in the region of an organic lesion, but in many there seems to be no such localizing factor. In these cases the undue tendency to scratch is grafted on to one of the quite usual physiological scratching areas of the body. Very often the normal person scratches the back of the head when faced with a problem. Many of us, I am sure, have felt an itch in the region of the anus. Most people itch when they see skin patients at first. The severity of the itch depends on the degree of awareness or attention to the itch. The strength of the feeling will vary from time to time. To take an example from the pain sense: if we are prepared for a blow the resulting sensation will be painful. If we, however, sustain a blow on the football field it may not be noticed at the time and the bruise be found later.

In these individuals the sense of awareness of their own feelings is tuned up to a high pitch, and just as the effort-syndrome case can feel his heart beating so the individual with the tendency to neurodermatitis senses an irritation which the normal person would not. I have rather laboured this point because I feel it is so important to try to explain the transference of emotional tension into irritation.

Pruritus

Pruritus ani and vulvae forms a problem which can be explained reasonably well on those grounds. I think the types of cases of pruritus ani vary with the clinic to which they are sent, a higher proportion due to organic diseases being seen in the surgical and gynaecological out-patient departments. Certainly 50% of the cases seen in the skin out-patient department are of psychogenic origin, although a fair proportion of these patients did have some slight organic disease which drew their attention to the part.

Unlike the psychiatrists, I do not think that irritation of the anus and vulva always has some deep dark sexual significance, but both these areas are prone to trivial infections, tears in the mucosa, etc., which may start a pruritus if the individual is at the time facing some conflict in his or her life. Here I would like to give two brief examples.

Case 4.—A man aged 50, a hard-worked executive in a big works, had always had hyperidrosis of the natal cleft. During a spell of hot weather this caused some maceration of the skin. At that time he was overworked and worried and was suffering from insomnia. He found that, while lying in bed awake at night, he began to scratch the lesion. Ointments of various kinds gave him only temporary relief. He was an obsessional personality, ultra-clean, and when he came to see me he gave a detailed description of his anus and perineum which showed that he had been studying the matter closely. On examination the perianal skin showed lichenification and excoriation. Under

treatment by reassurance and explanation, plus sedation, he ceased to have trouble. Here a trivial organic lesion in an obsessional personality under some strain became converted into a chronic pruritus ani.

Case 5.—An attractive and well-dressed woman aged 36 came to me complaining of pruritus vulvae. This dated from the time she found out that her husband had been unfaithful to her. Even though I could do nothing about her domestic life, an explanation of how the pruritus was caused, plus *x*-ray treatment and sedation, managed to cure her symptoms.

Occasionally one meets a case of localized pruritus where a search for a psychogenic factor appears completely negative. Sometimes these cases can be explained on a purely habit-scratching basis. These patients start to scratch a trivial organic lesion, and this becomes converted into a conditioned reflex rather similar to nail-biting. Any slight impulse from the site calls forth the desire to scratch, and eventually a patch of lichenified irritable skin results. An interruption of the vicious circle by local antipruritics and self-control by the patient may lead to a cure.

Lastly, there is a very small group—and I am sure that it is a very small group—who derive some erotic pleasure from scratching. In my experience this commonly occurs in young men, and the psychiatric explanation given for this is that the scratching is a form of masturbation. This group is incurable by the usual methods, and even with expert psychiatric treatment such as analysis success is unusual.

Eczema

Now to turn to the part played by the mind in eczema. All are familiar with the picture of infantile eczema which at a later stage develops into the flexural prurigo so classically described by Besnier in 1892. Here the constitutional tendency to eczema is inherited, and there is a close association between eczema and the other hypersensitive allergic states—asthma and hay-fever. All these diseases are evidence that the individual has inherited epithelium which is hypersensitive. The intelligence of the group is above average. Rogerson (1934) found an intelligence of 110–115 on the Binet scale. The normal average is 89.

The trigger which starts the eczema in infancy is usually organic. Cold winds, a strong soap, vaccination, an attack of gastro-enteritis, an allergic reaction to some food, a napkin rash, impetigo, and scabies can all precipitate an attack. Once the eczema has started the restless make-up of the child perpetuates the condition by rubbing and scratching. Taken at this stage the condition is primarily organic.

However, in many cases psychological factors are grafted on, and it is these which lead to the transition into Besnier's prurigo. In the majority of cases the parents are themselves anxious and excitable individuals, and the sight of their infant, often an only or a first-born child, tearing his skin to pieces and sleeping little at night completely demoralizes the home—as well it might. The mother tries ointment after ointment, fusses over the child's diet, prevents him playing with other children, and constantly attempts to stop him scratching. The child then becomes the pivot of the family and more and more demands care and attention, until he clings constantly to his mother. The continual thwarting of the child's activities leads to a rise in his mental tension. This leads to yet more irritation and scratching.

It is most striking that if the child is taken out of this environment he rapidly improves. As a generalization, all cases of infantile eczema can be cured quite rapidly in hospital or even in convalescent homes. That this might be due to removal from allergens is a criticism which has to be met in ascribing the trouble to psychogenic influence. However, relapse may occur whilst in hospital after a visit from the parents.

Removal of the child from the home gives the distracted and sleepless parents a chance to recover. The prevention of a recurrence, which may happen within a few hours of his return home, depends on the treatment of the parents. They should be reassured that the disease is not fatal, that it is nothing to be ashamed of, and that, if they will develop a more detached attitude to the problem and allow the child to go his own way even if this means watching him scratch, it will recover. The child should be allowed outside activities and to take up a normal life as soon as possible. By this handling of cases the continuation of the condition into adult life can in most cases be prevented.

The tendency to eczema, however, lasts into adult life, and if this group have to face situations which increase emotional tension relapses will occur. I have one patient a solicitor, who produces an outbreak of eczema after a week-end staying with his mother-in-law, whom he detests. Other cases recur if married life becomes impossible.

Rosacea

Rosacea is a permanent dilatation of the skin vessels of the nose, cheeks, forehead, and chin, associated with a papular and pustular eruption which is a sequel to the chronic dilatation. This dilatation may be caused in various ways. Exposure to wind and weather, dyspepsia, ovarian disease, and exposure to heat as in furnace-workers are responsible in some cases, but by far the commonest cause is reflex blushing of emotional origin. After many years of emotional blushing the vessels become permanently dilated, and later the papules and pustules form. At a later stage the eyes may be involved in the process, with the onset of keratitis.

Rosacea is essentially a dynamic process, exacerbation and remission occurring in a very short time. Exposure to a hot room, drinking hot drinks, and acute worry can all produce exacerbation. Klaber and Wittkower (1939) found that 35 out of 50 rosacea patients described themselves as quiet, reserved, and serious-minded. As children they disliked parties and meeting strangers. They were bashful, and any attempt to force them to appear in solo performances of any kind filled them with terror. They were obstinate and sullen if attacked. Rarely did they display any temper. He described the condition as showing undue social anxiety. With the background of this personality any acute emotional crisis is apt to produce rosacea. A typical example is the following:

The patient was a female shop assistant aged 35 who described herself as shy and who blushed easily on speaking to anyone. She was solitary, loved reading, had only one or two women friends, and hated meeting strangers. A year before I saw her she had had the first affair of her life with a married man. This she ended because she felt so ashamed. She was very upset at giving up this friendship, and lost interest in life. Shortly afterwards rosacea developed.

Here one can see the personality and the precipitating crisis associated with shame.

Group 3

The third group of skin conditions in which the mind plays a part are those in which only occasionally is the mental side a factor. In this group are included skin reactions such as urticaria, seborrhoeic dermatitis and psoriasis, hyperidrosis, cheiropompholyx, and alopecia areata.

So far I have been unable to produce scientific evidence that the mind can produce a skin lesion. It has all been the "I had a case" evidence. In dealing with urticaria one is on firmer ground. Grant, Pearson, and Comea

(1936) described a series of cases of urticaria in which attacks were brought on by emotion, heat, and cold. After the most exhaustive tests they proved fairly conclusively that the urticarial reaction in these patients depended on the peripheral nerves being intact; they believed the stimulus to be along these nerves and to be of cholinergic parasympathetic type.

The mechanism was that acetylcholine was released at the nerve-endings, and that this led to the formation of histamine, which produced the urticaria. In these cases attacks could be brought on by injecting carbachol and aborted by giving atropine. Peculiarly enough, some research done in 1947 on the nettle proved that a nettle sting acted not by releasing formic acid but by injecting acetylcholine and histamine, so that even the naturally produced nettle-rash falls into line with Grant, Pearson, and Comeau's work.

Further confirmation of the power of the mind to produced urticaria and even bleeding was given by Moody (1948), who described urticarial reactions occurring in a patient undergoing narco-analysis and reliving incidents of her past, in which she had been beaten by a sadistic parent. On recalling particular incidents, urticarial weals appeared on the original sites of the injuries.

The easiest way to regard seborrhoeic dermatitis and psoriasis is to look on them as skin reactions which are inborn and which may be precipitated in many ways—by trauma, by infection, and occasionally by mental stress. It was not uncommon to see men who on entering the Services developed seborrhoeic dermatitis which lasted all the time until they were invalided and then cleared rapidly without treatment. Psoriasis occasionally becomes generalized after emotional shocks.

The onset of alopecia areata is often related to unhappiness, though in a great many cases, particularly in children, no psychogenic factor can be discovered.

Just how much bearing the mind has on the onset of allergic and contact dermatitis it is difficult to assess. I feel that in some cases the hyperexcitability of the tissues, which allows them to become sensitized, may well be a result of anxiety. I remember the case of a woman who was unhappily married to a husband of another religion. She hated going to gatherings of his relatives, and on these occasions her face became flushed and irritable. I thought at first that the eruption was entirely psychogenic, but to make sure I patch-tested her to her lipstick, which she also applied to her cheeks as rouge. She gave a violently positive reaction, and cessation of its use led to clearing of the rash. She had been using the lipstick for years, and it may well be that unless she had been acutely unhappy she would not have become sensitized.

Local hyperidrosis is often a result of chronic anxiety. Cases occurred more often in the Services than in civilian practice.

Cheiropompholyx is a dangerous subject to discuss, as the causes are innumerable, but now and again one comes across a case with an obvious psychogenic background which can be cured by reassurance and explanation. Any case of cheiropompholyx for which no other cause can be found should be investigated for the presence of psychogenic influences.

I have been most impressed by the stories obtained from these patients with psychogenic backgrounds. It is not necessary to make up fears and difficult situations for them. Usually their life situations are such that it is not surprising to find them breaking down in one way or another.

Treatment

The most important feature is to realize that the handling of the psychodermatoses differs in no way from that of other psychosomatic disease. These patients are constitutionally less able to face life's problems than the average run of humanity, and are not persons with only an inflamed patch of skin.

A firm but kindly sympathetic approach is necessary, and it takes time to extract the life story and the salient problems which have led up to the onset of the dermatosis. It is impossible to gain the patients' confidence with other people—particularly relatives—present, and it may not be until the second or third interview that they will unburden themselves.

After the diagnosis has been made—and I hope that I have shown in what types of cases the psychogenic causes may be suspected—symptomatic treatment may be started. General sedation with small doses of phenobarbitone, local antipruritics—but here I must stress the need for simple agents not likely to sensitize the skin—and *x*-ray therapy, which is the most powerful antipruritic, will all help to alleviate the symptoms.

After the first few days, when the irritation lessens, the patient will accept more readily the doctor's reassurance that he knows what is the matter, and will be prepared to listen to a simple explanation of how a tense nervous state has led to the present condition. Even if the social conditions and environment remain impossible, as so many of them do, symptoms can be relieved.

However, relapse is likely unless something more can be done. In Sheffield we have an almoner whose main duty is solving the problems which beset these patients. She helps by arranging holidays for the housewife who has reached cracking point and home helps for those who cannot leave small infants. Sometimes she can find other accommodation for those who have to live with "in-laws," and alternative occupations for those who have uncongenial work. She obtains legal advice for those for whom a divorce seems the only way out, and, above all, she remains a friend to whom those in trouble can come and pour out their day-to-day worries.

In the short time that it has been in existence the almoner service has produced more permanent cures than all our ointments and magic rays. However, the person who should be really fitted to carry out the correct treatment is the family doctor. He has the facts of the family life at his finger-tips; we have to drag them out painfully. It is the family doctor who, if he can recognize that the skin condition which has brought Mrs. X to his surgery is really repressed indignation because she has an impossible husband, is the best person to give reassurance and advice.

There are, of course, incurables—the patients who trade on illness, those not intelligent enough to listen to advice and who cannot gain insight into their problems, and those who are so constitutionally inadequate that no one can help them. However, the incurables form only a small percentage, and I hope I have made my point that the psychodermatoses are a very real group among skin diseases and that a great deal can be done for those suffering from them.

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TREATMENT OF SKIN LESIONS CAUSED BY MUSTARD GAS

BY

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On the basis of clinical observations Chiesman (1944) and Davis (1944) published some general remarks on the treatment of skin burns caused by mustard gas. However, no study of the results of treatment under field conditions has appeared since the reports of the 1914–18 war casualties (Soltau and Elliott, 1923). The present paper deals with the treatment of a series of men exposed to mustard gas in the Tropics while living under an approximation to field conditions.

Material and Methods

Between 1943 and 1945 observations were made on 438 healthy young men exposed to mustard gas under tropical conditions—320 were exposed to mustard vapour and 118 to contamination by liquid mustard. Dressings were changed daily, and no attempt was made to maintain strict asepsis. The materials and methods used for treatment were purposely restricted to those readily available to any medical officer in the field. All applications were made on gauze or plain surgical lint and were kept in place by a bandage, since adhesive plaster did not adhere properly and gave rise to local irritation.

The lesions treated ranged from small superficial abrasion-like areas to large deep ulcers. Of the vapour cases 75 suffered nothing more than an erythema, and in only 154 of the remaining 245 did breaches of the continuity of the skin develop (Table I). Raw surfaces occurred

TABLE I.—*Lesions Available for Treatment*

Type of Case	Volunteers			Regional Raw Surfaces		
	No. Exposed	No. Treated	No. with Breaches of Skin	Total	No. Treated	No. of "Whole-thickness" Burns
Vapour ..	320	104	154	495	234	1
Liquid ..	118	83	79	254	68	18
Total ..	438	187	233	749	302	19

in 79 men exposed to liquid mustard, and 18 "whole-thickness" burns were distributed among nine of these men. The term "regional raw surfaces" in Table I refers to arbitrarily defined regions (Sinclair, 1948b) in which one or more breaches of surface continuity occurred, without regard to the number of these breaches. It will be noted that only 302 out of 749 regional raw surfaces received treatment: this figure includes all the whole-thickness burns and most of those lesions occurring in the 30 subjects who were admitted to hospital. In the remaining men 447 unselected regional raw surfaces received no treatment of any kind beyond the evacuation of vesicles, and were used as controls.

The irregularity and delay in development of mustard burns (Sinclair, 1948b) make it impossible to evaluate the effect of treatment unless the development of an exactly similar untreated burn in the same area of the opposite side of the same man can be observed. This requirement is seldom satisfied in mustard-gas burns. Further, in this series strict supervision of treatment was impossible. For these reasons no valid comparison can be made of the effect of the various treatments used on the development, course, and healing of the burns. However, sufficient detailed information was obtained to enable a general clinical appraisal of treatment to be made.

General Treatment

Pain was controlled by acetylsalicylic acid, phenacetin, bromide and chloral, or hyoscine hydrobromide. In the worst cases, particularly those with severe burns of the genitalia, ¼ gr. (16 mg.) of morphine three times daily was necessary.

The treatment of systemic poisoning (Sinclair, 1948a) was purely symptomatic and unsatisfactory. Nausea and vomiting were unrelieved by either alkaline mixtures or sedatives. Alkali was, however, useful in alleviating abdominal pain when given in full doses after meals. The typical severe headache was unaffected by acetylsalicylic acid, phenacetin and ergotamine.

Education formed a very necessary part of the treatment, owing to the prevalence of superstitious ideas about mustard gas. In two cases anxiety states developed, necessitating continued reassurance.

Local Treatment

Desquamation.—The onset of desquamation or exfoliation in any part was usually accompanied by considerable irritation, itching, and stinging pain. These symptoms were greatly aggravated by scratching, which took place in many cases while the men were asleep. For this reason it was occasionally necessary to apply a dressing to areas of severe desquamation. The treatment of choice was the inunction of zinc cream (*A.P.F.*) (anhydrous wool fat, 3; olive oil, 3; zinc oxide, 4; lime water, 4).

Raw Surfaces.—These were the result either of desquamation or of vesication. Vesicles were swabbed with weak "dettol" solution and pricked with a sterile needle to collapse down the vesicle roof. Subsequent re-evacuation was practised as necessary. Any blisters 1 cm.² or less in floor area were left without treatment of any kind (Table II). The treatments used for raw surfaces included the

TABLE II.—*Liquid Burns: Treatment of Raw Surfaces by Area*

Approximate Size of Raw Surface	No. of Lesions	No. Treated	Percentage Treated
0–1 cm.²	81	0	0
1–10 cm.²	192	19	10
10–100 cm.²	55	36	65
Over 100 cm.² ..	16	13	81

following: amyl salicylate, sulphonamide preparations (sulphanilamide powder and sulphathiazole powder), greasy preparations (zinc cream (*A.P.F.*), vaselined gauze, and acriflavine emulsion (*B.P.*)), and dyes (triple dye and 1 in 1,000 aqueous acriflavine).

Amyl Salicylate.—The drawbacks of amyl salicylate as a treatment for mustard burns are several. It is too irritant to apply to the scrotum by the ordinary method (Ministry of Health, 1942; Chiesman, 1944), and in vapour cases the scrotum is the region most commonly affected (Sinclair, 1948b). It cannot be applied to any area for longer than three or four days without causing pain (Ministry of Health, 1942; Cullimbine and Sinclair, 1942), it has an objectionable and persistent smell (Stewart, 1937), and it clings to the fingers, dressings, and bedclothes. It does not bring about more rapid healing (Cullimbine and Sinclair, 1942; Davis, 1944), and in the present series burns treated with it tended to be rather more painful than burns treated by other methods. "Hypersensitivity" to amyl salicylate has been reported (Stewart, 1937). In consequence of these objections, amyl salicylate has now fallen into disuse (War Office, 1944).

Sulphonamide Preparations.—In view of the effect of absorbed mustard derivatives in depressing leucocyte formation it is clear that the application of sulphonamides to any large mustard burn calls for considerable caution (Chiesman, 1944; Sinclair

1944). Many lesions treated with local sulphonamides in this series became slightly irritated and inflamed; it should, however, be noted that micronized sulphonamides were not available.

Greasy Preparations.—The outstanding feature of this group of treatments was the comfort of the lesions so treated. Zinc cream (*A.P.F.*) was the most successful and, under local conditions, the most readily available in bulk. These preparations also enabled quick and relatively painless changes of dressing to be made. This factor was particularly important in the case of burns of the genitalia.

Dyes.—Triple dye was extensively used for small raw surfaces. The dye was applied as a paint, two or three coats being given at each dressing, and the burn was then left completely uncovered. Patients preferred this treatment to the inconvenience of a dressing and bandage, and burns so treated were very comfortable and quickly ceased discharging. It should be noted that no attempt was made to tan the raw surface. Owing to the difficulty of obtaining strict asepsis at the time of application, tanning should be used sparingly under field conditions (Cullumbine and Sinclair, 1942; War Office, 1944; Chiesman, 1944; Davis, 1944). Acriflavine solution, 1 in 1,000 in water, was also used, but was not nearly so satisfactory.

Untreated Controls.—The untreated lesions appeared to be as comfortable and certainly healed as rapidly as the treated burns of comparable severity. The pressure and friction of clothing, except in the case of burns of the scrotum, did not give rise to undue discomfort, and the lesions dried up rather more quickly than in cases where treatment was applied.

Treatment of Genital Lesions.—For lesions of the genitalia the most comfortable and convenient application was vaselined gauze. In hospital cases a daily tepid saline bath also relieved pain and irritation to a marked degree. All dressings applied to burns of the scrotum in ambulant cases were conveniently retained in position by an elastic suspensory bandage. The value of these bandages cannot be overemphasized. The elastic support relieved the tension and dragging pain resulting from the presence of oedema fluid, and the friction of the clothing over the large, tender, raw scrotum was much reduced. Men with extensive deep burns, sometimes involving half the scrotal surface, were thus enabled to remain ambulant.

Complications

Dysuria.—Four cases with extensive raw surfaces on the glans penis suffered from intensely painful micturition, which was to a certain extent relieved by coating the burn heavily with vaseline. Ulceration of the meatus (Mackintosh, 1920) did not occur in this series.

Priapism.—In two vapour cases in which the penis was extensively burned, frequent, prolonged, and extremely painful priapism occurred, usually at night, during the first two weeks of treatment. Large doses of bromide and other sedatives were without prophylactic effect, and the only measure which afforded relief was an immediate cold saline bath.

Sepsis.—The presence of infection in any lesion was assessed as "slight" (some seropurulent discharge but no other local signs), "moderate" (frank pus present), or "severe" (frank pus, with local tenderness, inflammation of surrounding skin, and regional adenitis). The results of this classification are seen in Table III. The overall regional infection rate was 32 out of 749 (4.3%), and the infection rate was higher (9.4%) in the case of liquid burns than in the vapour series (1.6%). Many of these infections were, however, of very little clinical importance, and Table III shows that in only 10 (1.3%) cases could infection be described as more than trivial. It is also interesting to note that sepsis became established while local treatment was being applied in 17 out of the 302 cases which received treatment—an infection rate of 5.6%. The infection rate in cases receiving no treatment was 3.4%.

TABLE III.—*Incidence of Sepsis*

Type of Case	No. of Regional Raw Surfaces	No. of Regional Raw Surfaces Infected				No. of Infections Classed as More than Trivial
		Slight	Moderate	Severe	Total	
Vapour ..	495	6	1	1	8	2
Liquid ..	254	16	5	3	24	8
Total ..	749	22	6	4	32	10

Adenitis.—In four infected cases there was a regional adenitis throughout the period of infection. In eight other vapour cases, however, a regional adenitis appeared without any sign of local inflammation. The affected glands were rubbery, discrete, and not tender. These cases have not been considered under the heading of sepsis, since the absence of tenderness and pain, of any constitutional symptoms, of lymphangitis, and of any clinical evidence of infection in the drainage area was a noticeable feature.

Sloughs.—In the series of liquid burns small sloughs appeared in various situations in two subjects but separated rapidly; they were accompanied by slight sepsis. In the vapour series, however, it was a striking fact that slough formation, which occurred in six men, was confined to the prepuce. In the worst case gross annular sloughing occurred on the fifteenth day and did not completely separate until the thirtieth day.

Discussion

The mustard burn is not a specific and peculiar lesion, but is simply the response of the skin to a slowly acting tissue injurant (Sinclair, 1948b). It is therefore most unlikely that any specific treatment will be found for established mustard lesions, and in consequence it is permissible to treat such burns exactly as thermal burns, according to the personal preference of the operator. Koontz (1944), as a result of animal studies, concludes that "there is no major difference, either qualitative or quantitative, between heat burns and mustard burns of equal intensity," and points out that the same methods of treatment should therefore be applicable to both. Davis (1944) concludes that "almost any of the generally accepted technics of burn treatment" may be used for mustard burns in man. Insufficient attention has been paid in the past to difficulties of assessment, and specific treatments—for example, amyl salicylate—have been recommended for mustard burns on inadequate grounds.

The healing-time of mustard burns is not greatly influenced by the type of therapeutic agent employed (Cullumbine and Sinclair, 1942; Davis, 1944), and there is no evidence that any of the treatments applied in the present series achieved significantly better results than could be expected in the absence of local treatment. There remain, however, the factors of comfort, ease of application, availability, cost, etc., to be considered. Bearing in mind these considerations, it may be said that for the irritation caused by desquamation of the skin zinc cream (*A.P.F.*) was useful. For the raw surfaces, which constituted the most important feature of these cases, zinc cream and vaselined gauze were the best of the treatments investigated, while triple dye paint was extremely useful for minor lesions of this type and when a dressing could not conveniently be retained in position. For scrotal burns the suspensory bandage was invaluable, and in hospital cases saline baths were found very comforting.

There is a widespread opinion that mustard burns are especially liable to infection. Chiesman (1944) states that "they are slow to heal, prone to sepsis, and respond badly to any form of tanning." There is, however, no evidence to show that a series of human experimental thermal burns

is any less liable to infection than a series of mustard burns of similar intensity and distribution. Nor has it been shown that under these circumstances the thermal burns would heal any more quickly than the mustard burns. Until such an investigation has been made it is begging the question to hold that the mustard burn is specially prone to sepsis and slow to heal.

Summary

An account is given of some observations made on the treatment of a series of skin burns caused by mustard gas under tropical conditions. It was not possible to make any accurately controlled investigation, but it appeared that no local treatment achieved better results than could be expected in untreated burns.

On the basis of factors such as comfort, convenience, expense, etc., zinc cream (*A.P.F.*) and vaselined gauze were the best of the treatments investigated for breaches of skin continuity. Triple dye, used as a paint, was valuable for treating small superficial lesions.

Suspensory bandages were of great value in the treatment of scrotal burns.

There was a comparatively low incidence of sepsis, in spite of the fact that the burns were treated under an approximation to field conditions.

There is no reason to suppose that mustard burns behave any differently from thermal burns in regard to their healing or liability to infection.

The kindness of the Australian Chemical Defence Board in permitting publication of the work carried out under its direction is gratefully acknowledged. Permission to publish has also been received from the chief scientist, Ministry of Supply.

I should like also to record my indebtedness to Mr. J. W. Legge and to the numerous colleagues who assisted in the application, supervision, and assessment of the treatments investigated.

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INCIDENCE OF DIABETES MELLITUS IN CHILDREN AND NEED FOR HOSTELS

BY

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In an annotation in the *British Medical Journal* of Feb. 7, 1948 (p. 261), it was stated that "the incidence of diabetes is unknown, although some idea of its prevalence can be obtained from the mortality returns." Lawrence (1944) wrote: "Diabetes has been recorded in infants of a few months, but is very rare under 6 years of age." In America several surveys have been made. Joslin (1946) quoted the findings of the National Health Survey of 2,500,000 persons, carried out under the auspices of the United States Public Health Service in 1935–6, when it was found that in the age group 0–14 years one child in every 2,500 was a diabetic: the incidence was the same for boys and girls, and for all age groups was 0.37% of the total population (adults and children). Wilkerson and Krall (1947) reported the results of a thorough investigation into the incidence of the disease in Oxford, Mass. Of the 4,983 inhabitants 3,516 had their blood and urine tested. After allowing for the 29.4% of the town's citizens who had not been tested it was estimated that 1.7% of the population had diabetes.

Joslin (1946) also mentioned that the mortality rate from diabetes in the U.S.A. in 1943 was 27.1 per 100,000 of the population; in England and Wales in 1944 it was 9.6 per 100,000. The much lower diabetes death rate in England and Wales supports the view that the incidence of the disease is considerably less in these islands than it is in the U.S.A.

Present Investigation

In the absence of up-to-date information about the extent of diabetes in children in this country it was decided to make a survey, during the period February–June, 1948, in the following areas: Bristol, Birmingham, Birkenhead, Wallasey, Liverpool, Bootle, Salford, Manchester, Bradford, Leeds, Newcastle-upon-Tyne, Sheffield, Norwich, Ipswich, Great Yarmouth, Cambridge, Norfolk, Isle of Ely, Cambridgeshire, and East and West Suffolk.

All the school medical officers (who were, with one exception, also medical officers of health), the professors of child health, and all the hospitals in these areas likely to have child patients with diabetes were approached for information. The physicians of 32 hospitals co-operated: only one hospital ignored the requests made to it.

All lists of children supplied by the hospitals were cross-checked against the lists held by the school medical officers and the medical officers of infant welfare clinics to avoid duplication of names and to ensure that children not living in these areas were excluded, since many of the hospitals had patients from a wide countryside and from districts not included in this survey.

Size of Population Sampled.—The 16 cities and towns and the five counties selected for this inquiry had a total child population under 16 years of age of 1,307,000; there were about 750,000 school-children, being between one-sixth and one-seventh of the total school population of England and Wales: the rate was broadly similar for urban and rural children. Table I gives the number and age distribution of the children.

TABLE I.—*Age Distribution*

Age	Urban		Mainly Rural		Total	
0–4 ..	470,000		70,000		540,000	
5–9 ..	386,000	676,000	50,000	91,000	436,000	767,000
10–15 ..	290,000		41,000		331,000	
Total	1,146,000		161,000		1,307,000	

TABLE II.—*Incidence of Diabetes in Sample Population*

Age	No. of Children with Diabetes			
	Boys	Girls	Total	
0–4	1	2	3 (1 in 180,000)	
5–9	28	28	56 (1 in 8,000)	180 (1 in 4,300)
10–15	70	54	124 (1 in 3,000)	
	89	82		
Total ..	99	84	183 (1 in 7,000)	

Of the 180 school-children (Table II) 145 (1 in 5,000) lived in urban areas, and 35 (1 in 3,000) lived in mainly rural areas. If the sample can be taken as representative of the child population then the estimated number of diabetic school-children in England and Wales is 1,200 (1 in every 4,000–5,000).

Number of Diabetic Children in Need of Hostel Treatment

Several of the physicians who provided information expressed the opinion that diabetic children should remain at home and not be sent to hostels. One expressed the view of several when he wrote: "All diabetic children should be brought up to lead normal lives with other children, and I find that this is possible with nearly all of them." Another wrote: "I do feel that on the whole children suffer more by being moved from their home environment than they gain by going to live in a hostel." Others, however, considered that hostels were essential for a small minority of diabetic children; one gave the history of a girl aged 12 who spent most of her life in two hospitals, having been admitted to each alternately in diabetic coma. Another child, who was not receiving the treatment prescribed, was found to have a mother who did not understand the instructions given to her as "she was deaf and otherwise peculiar."

An interesting finding was the greater demand for hostels for children from rural areas. Table III gives the number and age distribution of the children in the sample population who were recommended for admission to a hostel.

TABLE III.—*Children Recommended for Admission to Hostel*

Age	Boys	Girls	Total
0–4	1	—	1 (1 in 500,000)
5–9	4	3	7 (1 in 60,000)
10–15	7	6	13 (1 in 25,000)
Total ..	12	9	21 (1 in 60,000)

Of these 21 children seven were already in a hostel or hospital. Thus in this series one diabetic child in every nine was recommended for a hostel. On these figures there is need for hostels for at least 130 diabetic children in England and Wales. The survey also showed that in mainly rural areas one school-child in every 13,000, and in urban areas one in every 50,000, should be in a hostel for diabetics. The main reason for the greater need for hostels for rural children is the lack of specialist treatment facilities within easy reach of their homes. The difference in the incidence of diabetes between the urban and rural population was not sufficient to explain the great disparity in the proportion of school-children recommended for a hostel in these two groups.

Since September, 1939, the London Education Authority has maintained a diabetic unit for 60 boys and girls at its large residential school at Hutton, Essex. On the average, only about 16 of the 60 are London children, giving a rate of one child per 20,000 of the London school population. In view of the effects of the war on London homes it was to be expected that more London diabetic children would require hostel accommodation than children in provincial cities and towns. Of the 16 London children living in Hutton during the period of this inquiry eight were fatherless, motherless, or had parents who were separated.

Allowing for the higher rate of hostel provision required for London and rural children, rather more than 130 places are needed. On the basis of the present investigation hostels for 130–150 diabetic children should be provided for a school population of about 5,000,000. In addition to the 60 places at Hutton a second hostel for 30 diabetic boys and girls was opened at Deal by the Church of England Children's Society in January, 1949. There are prospects of a third hostel for about 30 children being opened in 1949.

Anyone having doubts about the value of a hostel for a minority of diabetic children should visit Hutton. There the boys and girls are taught the diabetic way of life; they test their own urine and, under supervision, inject their own insulin. They are supervised by a trained nursing staff, and a specialist physician visits fortnightly. They lead as free and as normal a life as any child in a public boarding school. Their out-of-school life is full of variety. They take part in any physical activity or game that they choose and they all learn to swim in the school swimming-bath. Most are allowed home for the usual school holidays. In early summer they all go to camp for a fortnight at the seaside. They grow up into self-reliant men and women, fully capable of leading happy and useful lives. Unfortunately, some parents are so foolish that they prematurely withdraw their children from the hostel. Whittaker (1948) reported the deaths of five children who had been removed from Hutton against advice. And in this country in 1945, according to the Registrar-General (1945), 51 children under 15 years of age died from diabetes. These melancholy figures represent a yearly wastage of young lives that could be reduced considerably if adequate hostel facilities were available.

Summary

Of 1,307,000 children under 16 years of age (being from one-sixth to one-seventh of the total child population under 16 years of age in England and Wales) living in 16 English cities and towns and five counties, 183 (1 in 7,000) were known to have diabetes. Of the 180 school-children, 145 (1 in 5,000) lived in urban areas and 35 (1 in 3,000) in mainly rural areas. An incidence rate of 1 in 7,000 is only about one-third of that (1 in 2,500) found in 1935–6 in the survey sponsored by the U.S. Public Health Service.

The incidence rose sharply from 1 in 180,000 for children under 5 years to 1 in 8,000 for children 5–9 years and to 1 in 3,000 for children aged 10–15 years.

About one diabetic child in nine was recommended for a hostel. In the mainly rural areas one school-child in every 13,000, and in the cities and towns one in every 50,000, was considered suitable for a hostel; in London the rate was 1 in 20,000. The higher London figure was at least partly due to the effects of the last war, since half the total number of the London children were fatherless, motherless, or had parents who were separated. The high rural rate was mainly due to the absence of specialist treatment facilities within easy reach of the children's homes.

Allowing for the greater need for hostels for diabetic children in London and the rural areas, this survey revealed the need for hostels for 130–150 children under 16 years of age in England and Wales with a school population of about 5,000,000. At the time of this investigation there was hostel accommodation for only 60 diabetic children in the London County Council's School at Hutton. A second hostel for 30 children was opened in Deal in January, 1949, by the Church of England Children's Society, and there are prospects of a third hostel being opened during 1949.

I gratefully acknowledge the help given to me by the school medical officers of the areas mentioned in this article and by the professors of child health, physicians, almoners, and secretaries of the hospitals in these areas who so willingly supplied me with information.

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The Minister of Health and Local Government of Northern Ireland stated recently that plans are on foot to provide this year 200 additional beds for tuberculosis sufferers in Northern Ireland. The Minister added that he would further consider a suggestion that the Government should make representations to the proper authorities towards making arrangements for the treatment in Swiss hospitals of patients suffering from tuberculosis in view of the present shortage of beds in Northern Ireland.

SIMULTANEOUS EMBOLISM IN BOTH ARMS

BY

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We read a good deal about arterial embolism of the limbs these days, but it must be a somewhat rare occurrence, for I have had to wait twenty-nine years as a surgeon at a hospital of two hundred mainly surgical beds to see my first case. But, as if to make up for this delay, my case when it did appear presented me with simultaneous embolism of both axillary arteries. How rare this is I have not been able to discover. The surgical literature at my disposal does not record a single case.

Case History

The patient, a railway worker aged 69, had a Syme's amputation of his right foot in 1915 after an accident on the line. The stump has served him well, his only complaint being the usual one with Syme's amputations—that the boot tended to work round in internal rotation so that the toe struck his other foot in walking.

Four months before admission to hospital an ulcer developed over the external malleolus. It was very painful and gradually extended in spite of rest in bed, "elastoplast" bandaging, ultraviolet irradiation, and a variety of dressings, including penicillin. On admission he was seen to be a healthy-looking man. His past health record was good: he had not attended his panel doctor for twenty years. His blood pressure was 130/80, his urine was free from sugar and albumin, and his Wassermann reaction was negative. The radial artery was thickened, however, and capillary circulation at the extremities was slower than normal. A diagnosis of arteriosclerotic circulatory defect was made, and he was advised to have the limb amputated below the knee.

On June 24, 1947, I amputated the leg 4 in. (10 cm,) below the tibial tubercle under thiopentone–gas–oxygen–ether given by Dr. John Moore. The reduced size of the lumen of the tibial arteries was noticed. Healing was retarded by the poor nutrition of the flaps. There was no inflammatory or febrile reaction, but when the stitches were removed on the twelfth day there was considerable failure of union. Healing proceeded very gradually. His general condition was good and he was free from pain. He got about the ward in a wheeled chair and later on crutches.

On Sept. 12, at 5.30 p.m., he went out on crutches to the toilet and while there felt tingling in both wrists and "came over faint." He walked back to his bed on his crutches with assistance. The tingling increased and numbness developed in his hands. A little later he complained of pain in both upper arms. When I saw him at 6.30 he was not greatly distressed, but said the use had gone out of both his arms. They were cold and blue. He could move his fingers slightly. No radial pulse could be felt on either side. Pulsation was present in the left brachial artery to about 1 in. (2.5 cm.) above the humeral condyles. There was no pulsation on the right below the axilla, where the third part of the axillary artery was pulsating.

At 7.30, using brachial plexus block analgesia, I exposed the site of the embolism in the right axillary artery and, controlling the pulsating artery by a loop of tape held up by a haemostat, incised the non-pulsating area immediately below. A clot some 3 in. (7.5 cm.) long was extracted and a small rubber catheter was passed down the artery and suction applied by a syringe; in this way several more pieces of clot were obtained, and a stream of 2% citrate solution was injected. The arm was then massaged in an upward direction and finally the artery was closed by a single continuous suture of No. 2 nylon with a very fine needle. The adventitia was stripped from the artery above the incision and the tape was then relaxed. Pulsation could immediately be felt at the elbow. Others in the theatre said they could feel the radial pulse. The wound was closed and dressed and the patient given a cup of tea and a cigarette. After an interval of half an hour a similar proceeding was carried out at the lower end of the left brachial artery. A bifurcated clot which had filled the lower part of the brachial artery and the upper 2 in. (5 cm.) of both radial and ulnar arteries was extracted with forceps. Directly the artery was closed and the tape released full volume was restored in the radial pulse.

In view of the different fate which befell the arms I reviewed my technique to discover if possible what determined failure on the right and success on the left. Differences of procedure were as follows:

Right	Left
Operation two hours earlier	Operation two hours later
Incision in non-pulsating artery	Incision in pulsating artery
Denudation of vessel not so satisfactorily performed	Very thorough denudation of vessel
Injection of heparin had not been given, through delay in obtaining it.	Injection of heparin before starting operation.

Whatever the cause, and I am inclined to blame the inadequate denervation of the right artery, the subsequent fate of the two limbs was strikingly different. By the next morning the left arm was of normal appearance and all movements of the wrist and fingers could be obtained, and with considerable power. Radial pulsation was of normal volume. Subsequent progress was uneventful. The wound healed by first intention and the arm has remained in full function ever since. The right arm was discoloured and cold from the elbow downwards. Pulsation could be felt in the brachial artery down to the elbow. Capillary circulation could be shown to about 2 in. (5 cm. below the elbow. No radial pulse could be felt. Heparin was pushed, and the arm was kept exposed to cool air.

A masseuse visited him several times a day to give light effleurage and the skin was kept as sterile as possible by rubbing with spirit. 125,000 units of penicillin were given thrice daily. The colour remained the blue of a bruise and no improvement in capillary circulation could be seen, but the patient said he could feel life in the forearm nearly to the wrist and could make some slight movement of one or two fingers. After nineteen days massive vesication appeared and I amputated at the lower third of the upper arm. He has made a good recovery, uses his left arm normally, and is busy trying to walk on his new artificial leg.

KETONURIA IN A CHILD WITH CIRRHOSIS OF THE LIVER

BY

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The interest of the following case lies in the fact that a child with cirrhosis of the liver had ketonuria as the chief sign. The cirrhosis was unsuspected during life. The initial illness, characterized by constipation and abdominal distension, was apparently not related to the liver disease.

Case Report

In November, 1945, a boy aged 2½ was admitted to the Southampton Children's Hospital with severe constipation and abdominal distension. The condition was diagnosed as Hirschsprung's disease. A barium enema shortly after admission revealed a mild degree of megacolon; another, two months later, showed no abnormality. During the next eighteen months the boy was seen regularly in the out-patient department. He remained in fair health, though persistent constipation necessitated the regular use of aperients and occasional enemata.

In January, 1948, when aged 4 years 10 months, he was re-admitted. He had been well until the day before admission when he had had a convulsion. A further convulsion occurred a few hours later, this being followed by a third on the morning of admission, since when he had been comatose. On examination he was found to be unconscious, slightly cyanosed, and

breathing rapidly and deeply. There was slight neck rigidity. The abdomen was not distended, and rectal examination was negative. The urine contained a large quantity of acetone. Gerhardt's test for diacetic acid was also positive. Sugar was absent. Consciousness returned a few hours after admission. Next day a purulent nasal discharge, pharyngitis, and cough were noted. Radiographs of the chest and examination of the cerebrospinal fluid revealed no abnormality. The blood-sugar level was not estimated. A few days later, following a course of a sulphonamide, recovery appeared to be complete.

After leaving hospital he was noticed always to be listless and easily tired, though well enough to attend school for some weeks. In April, 1948, he was in bed for a week with pyrexia, vomiting, and diarrhoea. His parents remarked that at times he became excessively thirsty, and had an inordinate liking for salt. Apart from a distaste for sweet things, his appetite, though poor, was normal.

In July, 1948, he was again readmitted. A convulsion, preceded by severe abdominal pain, had begun a few hours previously, since when he had been unconscious. On examination he was found to be unconscious and slightly cyanosed, but was breathing normally. No other abnormal physical signs were elicited. The urine contained large quantities of acetone and diacetic acid. No sugar was detected. A sample of blood (taken on admission) showed a blood-sugar level of 35 mg. per 100 ml. A few hours after admission he was conscious and rational and was drinking glucose-water freely. His condition, however, deteriorated. During the night there were two convulsions, and vomiting became frequent. Twenty-four hours after admission he died in a third convulsion.

Post-mortem Findings.—Development normal; nutrition fair; no jaundice. *Lungs:*—Bulky and emphysematous; distended with air anteriorly and cover heart; some petechial haemorrhages on posterior surface; normal appearance on section. *Heart:*—Many large subpericardial haemorrhages. *Spleen:*—Much enlarged; weight, 4¼ oz. (135 g.); Malpighian bodies prominent. *Liver:*—Small; weight, 1 lb. 4½ oz. (580 g.); surface coarsely roughened; on section, coarse cirrhosis and early nodular hypertrophy. *Pancreas:*—Normal. *Kidneys:*—Cortex swollen, showing toxic changes. *Colon and other organs:*—Normal.

Histology.—Liver:—Portal cirrhosis of nodular type; the portal tracts show excess of fibrous tissue, and heavy infiltration by lymphocytes and a few eosinophils; the liver lobules are very irregular in size and shape; the sinusoids are full of red cells, indicating acute passive congestion. *Pancreas:*—Normal. *Kidneys:*—Marked congestion of the medulla and cortex and of glomeruli; cloudy swelling of tubules.

Comment

It may be inferred that the first attack of convulsions, which ceased spontaneously and did not recur for five months, was hypoglycaemic in origin and was precipitated by a mild infection of the upper respiratory tract.

The low level of the blood sugar was no doubt due to the liver disease (Hartmann and Jaudon, 1937), and was probably the cause of death. Hypoglycaemia has been observed in the last stages of cirrhosis (Peters and van Slyke, 1946; Halbertsma, 1932). In this case, however, the absence of ascites, jaundice, and wasting shows that the disease was hardly in the last stage. Moreover, there had been recovery from the previous attack. Peters *et al.* point out that the hypoglycaemia of liver disease characteristically appears at the end of a considerable period after meals, and that often it is preceded by alimentary hyperglycaemia.

My thanks are due to Dr. H. Oakley White for permission to publish this case; to Dr. H. H. Gleave for the post-mortem examination, results of pathological and histological investigations, and comments; and to Dr. G. Ormiston for helpful criticism and advice.

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Medical Memoranda

Spontaneous Subarachnoid Haemorrhage in Infancy due to Angioma of the Cerebellum

The rarity of spontaneous subarachnoid haemorrhage in infancy and the nature of the pathology of this case prompt its presentation for publication.

CASE HISTORY

The patient, a male infant, was the only child of healthy parents and had been born at full term by a normal labour. The neonatal course was uneventful, and he progressed well in all respects up to the age of 3½ months. Then suddenly one afternoon, while being dressed by his mother, he had a convulsion and became semicomatose. He remained in this state, punctuated by recurring generalized fits, until his admission to hospital some hours later. There was no history of any antecedent illness, and the family history revealed nothing of note.

On admission his temperature was 104° F. (40° C.). His condition was that of a resistant stupor. The head was held turned towards the right shoulder and there was conjugate deviation of the eyes to the right. A capillary naevus 3 cm. in diameter was noticed over the left occipital region, and a small capillary naevus was present on the right upper eyelid. The fontanelle was not bulging, but it felt spongy. The head circumference was 17 in. (42.5 cm.). The pupils were of normal shape and reacted to light; no abnormality was seen in the fundi. The head deviation made the assessment of any nuchal rigidity difficult, but there was no spasticity or obvious paralysis of any of the limbs. The heart rate was markedly irregular, tachycardia and bradycardia alternating in an inconstant manner. No other abnormality was found. Lumbar puncture produced 6 ml. of evenly blood-stained C.S.F.; the supernatant fluid was yellow.

Thiopentone per rectum and chloral hydrate were given to control the fits, and 500 mg. of ascorbic acid and 10 mg. of "synkavit" were injected intramuscularly every six hours. Oesophageal feeding was used. No significant change in his condition occurred until two days later, when oedema of the eyelids, right-sided facial spasm, and spasticity of all limbs were noted. A lumbar puncture, done four days after the onset of the illness, again showed a blood-stained C.S.F.

The next day saw considerable improvement in the clinical condition. The fits had ceased, the temperature was almost normal, and the patient was able to take feeds from a bottle. By the ninth day the palpebral oedema had subsided, the deviation of head and eyes and spasticity had relaxed, the temperature was normal, and he was taking notice and feeding eagerly.

This satisfactory state continued for three days. Then his temperature suddenly rose to 104° F. (40° C.), subsequently reaching 107° F. (41.7° C.). No abnormal physical signs were found except for a slight reddening of the left ear-drum. Microscopical examination of the urine and an *x*-ray film of the chest showed no abnormality. Lumbar puncture produced a clear C.S.F. with a high chloride content (860 mg. per 100 ml.).

A left myringotomy was performed, but no pus was obtained. Hyperpyrexia (107° F.: 41.7° C.) persisted until his death in coma two days later.

Post-mortem Examination.—There was some pooling of blood in the subarachnoid space in the posterior fossa, together with blood-pigment staining. A venous plexus was present over the surface of the left cerebellar hemisphere and one of the vessels had ruptured, the aperture being filled with blood clot. In the substance of the left cerebellar hemisphere there was a vascular neoplasm 3 cm. in diameter, with haemorrhage into it and into the surrounding brain tissue. The left choroid plexus was thrombosed. No tumour was found in any other part of the nervous system and no cysts or tumours in any other organ. The middle ears were healthy and no other disease process was found.

Histological Examination (Professor J. Gough).—"The sections of cerebellum show a haemangioblastoma. In parts there are cellular tissues with ill-developed blood spaces; elsewhere there are cavernous spaces. There is surrounding gliosis and evidence of old and recent haemorrhage, resulting in the formation of haemosiderin and haematoidin. Intense macrophage activity is present."

This case is interesting in that the subarachnoid bleeding occurred abruptly in an apparently healthy infant aged 3½ months, and in the association between two capillary naevi in the head area and a venous plexus over the surface of the left cerebellar hemisphere with a haemangioblastoma in its substance. The sequence of events is thought to have been, first, rupture of one of the veins of the plexus overlying the cerebellum, producing subarachnoid haemorrhage, then an

interval of quiescence leading up to the final and fatal haemorrhage in the substance of the cerebellum containing the haemangioblastoma.

We wish to thank Mr. Melbourne Thomas for permission to publish this case; and we are indebted to Dr. D. C. Taylor and Professor J. Gough for the post-mortem examination and the histological report.

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Case of Rupture of Left Lower-Lobe Bronchus with Recovery

Traumatic rupture of the bronchus is a rare condition, and is seldom diagnosed. Many of the cases are fatal, as they are associated with severe crushing injuries of the chest. Kinsella and Johnstrud (1947) reported 38 cases. In the following case the rupture occurred without any fracture of the ribs, though presumably the chest must have been compressed, possibly by the motor-cycle falling on it.

CASE HISTORY

A man aged 24 met with a motor-cycle accident in December, 1946, and sustained concussion, multiple abrasions, and a fracture of the right humerus. He was admitted to the City General Hospital, Sheffield, where he recovered fairly quickly; he was discharged towards the end of January. In February, 1947, he became ill, left lower-lobe pulmonary pneumonia being diagnosed, and was re-admitted to hospital. He recovered on sulphonamide therapy, and was discharged. One year later he again became ill, beginning with a rigor and pain in the lower part of the left side of his chest. This lasted a few days, after which he got up and went about but did not feel very well. He had aches in various parts of his body, felt feverish, and had a fairly severe headache most of the time.

He was sent to the Royal Infirmary, Sheffield, as a case of pneumonia. He once more settled down, and his temperature became normal; an *x*-ray film, however, revealed a collapse of the left lower lobe. I was asked to see him, and after bronchoscopy and bronchography at the City General Hospital I diagnosed a probable

rupture of the left lower-lobe bronchus. The bronchogram showed failure of the left lower lobe to fill, and the bronchoscopy failed to disclose any evidence of entry to the lower lobe. The upper-lobe bronchus was rotated downwards, and the bronchoscope could be introduced into it quite easily. Lobectomy was advised and was carried out at the City General Hospital.

At operation it was found that the left lower-lobe bronchus had been torn partly across, and had only fibrous tissue on one wall, but there was some cartilage still in continuity with the main left bronchus. There was no passage between the lower lobe and the main bronchus, and it was therefore not necessary to suture the bronchus. The man made an uninterrupted recovery and was discharged a fortnight after operation.

The left lower lobe was completely bronchiectatic and the bronchi were filled with an albumin-like substance, apparently inspissated mucus. It coagulated with formalin. Pus was not found in any of the bronchi, and the infection seemed to have died down.

The accompanying illustration shows the appearance of the specimen.

I am indebted to my chief assistant, Miss Slesser, for performing the bronchoscopy and for the bronchogram.

A. W. FAWCETT, F.R.C.S.

REFERENCE

Kinsella, T. J., and Johnstrud, L. W. (1947) *J. thorac. Surg.*, **16**, 571.

A Case of Spontaneous Rupture of the Uterus

In view of the comparative rarity of this condition the following case seems worthy of record.

CASE REPORT

A married woman was admitted at term at 2.45 a.m. She had been delivered fifteen months previously, with forceps, of a living child of 8 lb. 4 oz. (3.74 kg.). Post-natal examinations made on two occasions by a member of the consultant staff revealed no injury to the cervix or the vagina. Apart from retention of urine and a slight rise of temperature, the puerperium was uneventful.

The present pregnancy had been normal. Labour had begun at 12.45 a.m. with a show and contractions which were one in three minutes on admission. On examination the presentation was L.O.A. with the head in mid-cavity. The membranes ruptured at 3.15 a.m. and the cervix was fully dilated at 3.45 a.m. At 4.50 the head was visible but was progressing very slowly, and the foetal heart became weak and irregular. Five minutes later a particularly strong contraction was felt, after which no further contractions were observed. The patient complained of a dull ache in the abdomen, but her pulse and colour remained normal. On examination the abdomen was slightly tender and a group of limbs were felt very easily at the umbilicus, but the uterus appeared of uniform thickness above and below this point. The foetal heart was inaudible.

The history suggested a ruptured uterus, but in view of the absence of shock or haemorrhage it was decided that the foetus should be delivered. Pitocin was given immediately before. Under anaesthesia, the head was found in an anterior position with little caput or moulding and a foetus was delivered without difficulty, although the subpubic angle was rather narrow. It was stillborn and weighed 7 lb. 15 oz. (3.6 kg.). The cord was traced up the vagina into the peritoneal cavity through a tear in the lower segment and cervix. The uterus lay above and was well contracted. There was little haemorrhage and the patient's general condition was satisfactory.

At laparotomy a vertical tear was found in the lower segment, extending through the cervix into the anterior vaginal wall about 4½ in. (11.25 cm.). This was repaired in two layers. The patient became very shocked at the end of the operation, and an intravenous transfusion of 2 pints (1.14 litres) of Group O blood was given. After a prophylactic course of sulphadiazine and penicillin an uninterrupted recovery followed.

On discharge, on the nineteenth day, the vagina and cervix were healing satisfactorily. Two months after delivery the anterior vaginal wall was almost healed and the cervix completely healed.

COMMENT

This case is one of spontaneous rupture of the uterus in the course of a rapid labour with strong contractions. Rupture occurred when the head was still descending, though more slowly than earlier in the second stage. There was no evidence of disproportion, since the head was well flexed in an occipito-anterior position with little caput or moulding, the foetus being also smaller than the first baby. No sign of weakness or injury of the birth canal was found after the first confinement. The lower segment was not unduly thinned at laparotomy. The only apparent explanation would appear to be that the magnitude of the contractions caused the tension in the uterus to rise at such a rate that it ruptured before the tension could be released by downward movement and delivery of the head.

The case is also remarkable for the lack of constitutional disturbance associated with a tear 4½ in. long involving the lower segment, cervix, and anterior vaginal wall, there being no clinical evidence of shock till the close of the laparotomy nearly four hours after the time of rupture. The tear was situated almost in the midline, thereby avoiding the large vessels, which may offer at least some partial explanation of these facts.

I wish to thank Mr. A. R. Lister for performing the laparotomy for advice on the conduct of the case, and for criticisms of the report.

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Reviews

BIOCHEMISTRY REVIEW

Annual Review of Biochemistry, Editor, J. Murray Luck; Associate Editors, Hubert S. Loring and Gordon Mackinney. Volume XVII. (Pp. 801. $6.00 or £1 16s.) California: Annual Reviews, Inc. London: H. K. Lewis and Company. 1948.

The *Annual Reviews* began, with the *Annual Review of Biochemistry*, as a luxury, but have now become a necessity, even though more and more specialized volumes are published each year. The literature is growing at such a pace that though reviewers have been asked by the editors to screen the literature more and more severely, and if need be to review but a fraction of the papers published in the preceding year or biennium, recent volumes of the *Annual Review of Biochemistry* have approached or exceeded 800 pages. The decision has therefore been taken to institute a new review, and in 1950 it is proposed to start an *Annual Volume of Plant Physiology*. While such a high degree of specialization is to be regretted from some points of view, those who are working in specialized fields of research realize its inevitability.

The present volume contains reviews on the following subjects: Biological Oxidations and Reductions, by H. Weil-Malherbe. Nonoxidative Enzymes, by J. B. Sumner. Chemistry of the Carbohydrates, by D. A. Prins and R. W. Jeanloz. The Chemistry of the Immunopolysaccharides, by W. N. Haworth and M. Stacey. *X*-ray Crystallographic Studies of Compounds of Biochemical Interest, by D. Crowfoot. Chemistry of the Lipids, by J. Folch-Pi and W. M. Sperry. The Chemistry of the Proteins and Amino Acids, by K. O. Pedersen. Nucleoproteins, Nucleic Acids, and Related Substances, by E. Chargaff and E. Vischer. Carbohydrate Metabolism, by B. Vennesland. Lipid Metabolism, by I. L. Chaikoff and C. Entenman. The Metabolism of Proteins and Amino Acids, by J. B. Allison. The Metabolism of Drugs and Toxic Substances, by O. Bodansky. Clinical Applications of Biochemistry, by L. J. Zeldis and S. C. Madden. Biochemistry of the Hormones, by T. F. Gallagher. The Vitamins, by B. L. Oser. Clinical Aspects of Vitamins, by T. D. Spies. The Biochemistry of Carcinogenesis, by H. P. Rusch and G. A. LePage. Biochemistry of the Natural Pigments, by E. Lederer. The Terpenes (in relation to the Biology of Genus Pinus), by N. T. Mirov. The Alkaloids, by R. F. Dawson. Photosynthesis, by E. C. Wassink. Mineral Nutrition of Plants, by H. Burström. Plant Hormones, by P. W. Zimmerman and A. E. Hitchcock. Bacterial Metabolism, by I. C. Gunsalus. The Chemistry of Penicillin, by E. Chain. Ruminant Digestion, by S. R. Elsden and A. T. Phillipson. Physiological Aspects of Genetics, by G. W. Beadle.

Many of these follow the usual lines, although the authors treat their subjects very differently. In the review on clinical applications of biochemistry Zeldis and Madden discuss serum potassium phosphatases, blood iodine, electrophoresis, liver function studies, and porphyrins. The article on the chemistry of penicillin by E. Chain is of exceptional clarity and will interest the chemistry-minded medical man who wishes to have some idea of this rather complicated matter. Perusal of this article will yield ample understanding of the delays there have been in providing a satisfactory synthesis of the naturally occurring penicillins. Among reviews of topical importance that on ruminant digestion by Elsden and Phillipson brings together much material that has been developed by the late Sir Joseph Barcroft and his group at Cambridge in relation to the earlier and contemporary observations. This is a most interesting field of study which, although it may have little direct application to human digestion, may nevertheless be of growing importance in the "Malthusian" world which we now appear to inhabit. The article on the physiological aspects of genetics by G. W. Beadle is reprinted from Vol. X, 1948, of the *Annual Review of Physiology* and deals with what may be regarded as the experimental descendant, particularly in regard to micro-organisms, of the work on naturally occurring "inborn errors of metabolism" pursued by Garrod and others many years ago.

The biochemist cannot afford to be without the *Annual Reviews of Biochemistry*, and specialists in other fields of activity find the yearly volume an invaluable reference book. The non-specialist will find much of interest to read within the 800 or so pages of the current volume, and it is to be hoped that he will close the book with the impression that biochemistry is perhaps not such a difficult and complicated subject as is sometimes believed.

F. G. YOUNG.

TUBERCULOSIS DISCUSSED

Tuberculosis. A Discussion of Phthisiogenesis, Immunology, Pathologic Physiology, Diagnosis, and Treatment. By Francis Marion Pottenger, A.M., M.D., LL.D., F.A.C.P. (Pp. 597; illustrated. £3.) London: Henry Kimpton. 1948.

The author of this long and diffuse book presents in discursive style his views on the "phthisiogenesis, immunology, pathologic physiology, diagnosis, and treatment" of tuberculosis, with especial reference to pulmonary tuberculosis. Dr. Pottenger has strong views on many controversial topics and puts them forcefully. He regards primary infection as valuable in creating specific protection, and accordingly he is a keen advocate of B.C.G. vaccination. His approach to therapy is enthusiastic, and his optimism must have been a valuable therapeutic aid for his patients. He is convinced of the continued value of physical examination of the chest in the diagnosis of pulmonary tuberculosis, but emphasizes that for the non-specialist the "clinical history, examination of the sputum for tubercle bacilli, and the *x* ray" are the important factors. He devotes a chapter to the treatment of pulmonary tuberculosis by tuberculin, though he admits that he considers the evidence for its value in pulmonary tuberculosis not so impressive as in some other forms of the disease, that its value cannot be proved by controls, and that he cannot claim that the beneficial effects he has observed are due to the tuberculin, since he applies "rest, open air, nutritious food, sunlight, pneumothorax, optimism, and other factors" in addition.

These remarks may serve to indicate the very personal views which are expressed in the book. Based as they are on a lifetime of experience and study of tuberculosis, they will ensure that the book can be dipped into with interest by specialists. It may be doubted, however, whether the likelihood of obtaining from it a reliable background of accepted modern views is sufficient to justify the student's perusing its approximately 600,000 words.

J. G. SCADDING.

D.D.T. FOR MOSQUITOES

Malaria, Filariasis, and Yellow Fever in British Guiana. By George Giglioli, M.D.It., M.R.C.P., D.T.M.&H.Eng. (Pp. 226; illustrated. No price.) British Guiana: Mosquito Control Service Medical Department. 1948.

The subtitle of *Malaria, Filariasis and Yellow Fever in British Guiana* is "Control by residual D.D.T. methods with special reference to the progress made in eradicating *A. darlingi* and *Aedes aegypti* from the settled coastlands." The reason why three major diseases are discussed together is that all are conveyed by mosquitoes and therefore all are now open to successful attack through D.D.T. Further, since the possibility of attacking anopheline mosquitoes with a residual insecticide in the home rather than through antilarval measures in the field has become one of the major measures in antimalaria work, it has increasingly meant that measures against malaria can be combined with those against all insect-borne disease transmitted in the home. The area considered is largely given over to sugar-cane cultivation, and the conditions, as is evident from the photographs accompanying the work, would clearly be impossible to deal with by drainage or the usual type of antilarval operations, since for cultivation purposes the land is largely under water. Hence D.D.T. has been used, causing drastic reduction in the total domestic mosquito population, without any modification in the hydrological conditions, which have remained what they always were.

The operations were carried out by the Mosquito Control Service working in collaboration with staff from the British Guiana Sugar Producers' Association. The materials used, spraying equipment, dosage, and other technique, as also the organization, costs, and results, are all clearly described.

Malaria was the chief disease, being highly endemic, and it therefore received first attention. But filariasis was also important and the appearance of yellow fever always a possibility, so that operations included action against *C. fatigans* and *Aedes aegypti*. It is interesting to note that the use of D.D.T. is far from being a purely routine matter with no call on the results of research, and the author expressly notes, if success is to be attained, the absolute necessity of close research into the habits of the adult, just as antilarval operations require research into the selective breeding habits of the different species.

S. R. CHRISTOPHERS.

PREFERENCE JUDGMENTS

Experimentelle Triebdiagnostik (Experimental Diagnosis of Impulsive Disorders). By L. Szondi. (Pp. 308. 68 Swiss francs.) Berne: Medizinischer Verlag Hans Huber.

The author of this somewhat formidable work is concerned to introduce a new psychodiagnostic method, obviously inspired by the Rorschach technique. The material consists of six sets of eight full-face photographs of various types of psychopathic individual, and is provided with the volume. Each set is presented in turn to the subject, who is required to indicate which of the individuals portrayed he finds most attractive and which most distasteful. The preference judgments thus obtained are recorded as a profile from which, it is claimed, certain conclusions of psychodiagnostic import can be drawn. The bulk of the volume consists in a description of the profiles made by a variety of psychotic and psychoneurotic individuals and an attempt to interpret them in the light of the author's reading of contemporary psychopathology.

It appears rather unlikely that Dr. Szondi's method will commend itself to clinical psychologists in this country. Although the analysis of preference judgments is a matter of some psychological interest, especially in so far as it may furnish a clue to the operation of deep-seated unconscious tendencies, the existing findings are too slight to justify the elaborate interpretations which Dr. Szondi puts on them. His test photographs, too, are so antiquated and repellent as to deter all but the most hardy and humourless of psychometrists. From the theoretical standpoint, the book appears to contribute little that is new to our understanding of personality, normal or deranged. It is turgid, verbose, and representative of the worst aspects of neo-Freudian psychopathology. One may fervently hope that the "Szondi test" will not become the focus of yet another esoteric cult in the psychological fraternity.

O. L. ZANGWILL.

HORMONES AND BEHAVIOUR

Hormones and Behaviour. A Survey of Interrelationships between Endocrine Secretions and Patterns of Overt Response. By Frank A. Beach. Foreword by Earl T. Engle. (Pp. 368. $6.50.) New York: Paul B. Hoeber, Inc. London: Hamish Hamilton. 1948.

The author of this painstaking book gathers into one volume an almost staggering amount of information about the effects of the endocrine glands on the behaviour of fishes, amphibia, reptiles, birds, the lower mammals, and the primates, including man. If the last receives less attention than he himself would consider to be his fair share, that is his own fault in failing to control scientifically his experiments on himself and in degrading too often the proper study recommended by Pope into an improper study. Courtship, mating, bisexuality, oviposition, parturition, parental behaviour, migration, aggression, territorial defence, the acquisition of learning, metamorphosis, metabolism, are all fully considered—considered but not discussed, for the weakness of the book lies in its paucity of critical discussion of the results reported.

But if we are inclined to condemn this book as a scissors-and-paste compilation we have at once the author's reply: "Most books, it seems to me, develop in one of two ways . . . the second type . . . has a well-defined function to fulfil. Its role is not the exposition of a thesis, but the supplying of a body of facts and references. It is not a living organism but an inanimate tool and as a tool it may play a useful and important part." Not "may"—"will."

RAYMOND GREENE.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received*]

Essen und Wissen. By H. Bircher-Rey. 2nd ed. (Pp. 203. No price.) Zurich: Rascher. 1948.

A book on dietetics intended for laymen as well as medical men.

Histopathology of the Peripheral and Central Nervous Systems. By G. B. Hassin, M.D. 3rd ed. revised. (Pp. 612. $8.50.) Chicago: The Author. 1948.

A textbook with illustrations and extensive bibliographies.

Subacute Bacterial Endocarditis. By E. Libman, M.D., and C. K. Friedberg, M.D. 2nd ed. (Pp. 113. 21s.) New York and London: Geoffrey Cumberlege. 1948.

A review in the light of recent knowledge; reprinted from the *Oxford Loose-Leaf Medicine*.

Change of Life in Women. By Medica. (Pp. 76. 5s.) London: Delisle, Ltd. 1948.

A simply written account for women by a medical practitioner.

A Surgeon's Domain. By B. M. Bernheim, M.D. (Pp. 217. 9s. 6d.) Kingswood, Surrey: The World's Work (1913), Ltd. 1949.

Reminiscences and opinions of the Associate Professor of Surgery at Johns Hopkins Medical School.

Zinc Ions in Ear, Nose, and Throat Work. By A. R. Friel, M.D., F.R.C.S.I. (Pp. 59. 5s. 6d.) Bristol: John Wright. London: Simpkin Marshall. 1948.

An account of zinc electrolysis and ionization.

Children in Need. By M. Schmideberg, M.D. (Pp. 196. 12s. 6d.) London: George Allen and Unwin. 1948.

The author describes psychiatric and social methods of treating difficult children and their parents.

The Structure of Medicine and its Place Among the Sciences. By F. M. R. Walshe, M.D., D.Sc., F.R.C.P., F.R.S. (Pp. 26. 1s. 6d.) Edinburgh: E. and S. Livingstone. 1948.

The 1948 Harveian Oration.

Handbook of Surgery. By E. C. Mekie, M.B., Ch.B., F.R.C.S.Ed., F.I.C.S., and I. Mackenzie, M.B.E., M.B., Ch.B., F.R.C.S.Ed. 2nd ed. (Pp. 764. 20s.) Edinburgh: E. and S. Livingstone. 1949.

Intended particularly for medical students; the text has been extensively revised for this edition.

The Scotsman's Food. By A. H. Kitchin, M.B., and R. Passmore, M.A., D.M., F.R.S.Ed. (Pp. 86. 3s. 6d.) Edinburgh: E. and S. Livingstone. 1949.

A historical introduction to modern food administration.

Psychological Medicine. By D. Curran, M.B., F.R.C.P., D.P.M., and the late E. Guttmann, M.D., M.R.C.P. 3rd ed. (Pp. 249. 12s. 6d.) Edinburgh: E. and S. Livingstone. 1949.

A practical guide for the non-specialist.

Introductory Botany. By A. Nelson, B.Sc., Ph.D., D.Sc. (Pp. 479. 22s. 6d.) Edinburgh: E. and S. Livingstone. 1949.

A textbook for medical students.

The Story of Human Birth. By A. F. Guttmacher, M.D. (Pp. 201. 7s. 6d.) London: Sigma Books. 1949.

An account for the layman.

Bacterial Metabolism. By M. Stephenson, Sc.D., F.R.S. 3rd ed. (Pp. 398. 30s.) London: Longmans, Green and Co. 1949.

A description of the essential chemical processes accompanying the life of bacteria. (Dr. Stephenson died in December, 1948.)

Neurological Anatomy in Relation to Clinical Medicine. By A. Brodal. (Pp. 496. 42s.) Oxford: Geoffrey Cumberlege. 1948.

A textbook for clinical neurologists by the Prosector of Anatomy, Oslo University.

A Handbook for the Assistant Nurse. By M. E. Swire, S.R.N., S.C.M. (Pp. 308. 10s. 6d.) London: Baillière, Tindall and Cox. 1949.

A textbook intended to cover the syllabus for assistant nurses.

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THE KING'S HEALTH

Over the last four months occasional bulletins from his medical advisers have kept the public informed of the state of the King's health. The medical profession in Britain shared to the full the anxiety felt by all his subjects when the first bulletin was issued in November and the relief that followed the better news contained in later bulletins. The medical profession has been aware of the kind of problem that would be presented to the King's advisers, and the bulletin issued on March 8 did not, therefore, come as a surprise. This bulletin stated that the King's general health continued to be excellent. It went on to describe how the circulation had been satisfactorily restored in the left leg but was still obstructed in the right leg. The King accepted the advice that lumbar sympathectomy should be undertaken with a view to improving the blood supply to the right foot, and the operation was performed on March 12.

The medical profession will join with the rest of the country in heartfelt sympathy for the King and a loyal wish that the operation will bring his Majesty relief and comfort.

SYMPATHECTOMY IN PERIPHERAL VASCULAR DISEASE

Knowledge of the sympathetic nervous system has been acquired slowly. Galen described the sympathetic chains arising within the skull, but the first correct anatomical description was published by Petit only in 1727. There were gradual additions to anatomical knowledge over the next two centuries, but there was no true understanding of the functions of the autonomic nervous system until the brilliant researches of Gaskell and Langley. The first surgical attack on the sympathetic system accompanied the publication of these physiological investigations, but the early operations were ill-conceived. The earliest operations were performed in cases of epilepsy in 1889 by Alexander.[1] Ten years later Jaboulay treated patients with toxic goitre by cervical sympathectomy, but his results, like Alexander's, were poor, and interest in this branch of surgery waned. The modern application of sympathetic surgery to the treatment of peripheral vascular disease may be said to have started with the periarterial sympathectomies of Leriche,[2] but the results were evanescent and uncertain. The trial of ramisectomy and ganglionectomy in the treatment of peripheral vasospastic disorders followed the discoveries made accidentally by Hunter[3] and Royle,[4] who were treating cases of paralysis. Since then a great deal of work has been done on this subject, but even now we remain in ignorance of many apparently simple and straightforward matters. Sympathectomy is now widely employed in the treatment of peripheral vascular disease, and it may be useful to review the present position.

Sympathectomy remains the most satisfactory method of treatment in Raynaud's disease proper, although it is indicated only in a minority of cases. Before advising operation the diagnosis must be established with certainty, and the degree of disability and the severity of the disease in the individual case must be carefully considered. Operative treatment is especially indicated when increasingly severe attacks are occurring with each fresh spell of cold weather; in moderately advanced cases without ulceration or scleroderma; and in late cases with painful superficial ulcers. Recurrence is more likely in the latter cases, and they may then develop scleroderma, which, in the absence of sweating following sympathectomy, may sorely handicap the patient. In the upper extremity sympathectomy gives complete and permanent relief in rather more than 10% of cases; incomplete relief in some 50%; and no relief or but transient relief in the remainder. The results obtained seem to depend on the completeness of the operation and the stage of the disease. Failure has been ascribed to incomplete operation, anatomical variations, regeneration of nerve fibres, and the sensitization to adrenaline. There has been a disinclination to accept the possibility of nerve regeneration, although it has been shown that this is the most likely factor.[5 6] The new pathways so formed are probably functionally inferior to the original ones.[7] The much more satisfactory results obtained in arterial disease in the lower limbs, the operation being preganglionic, led to the abandonment of the old anterior cervico-thoracic sympathectomy for arterial disease in the upper limbs. This operation was supplanted by what was believed to be an essentially preganglionic operation performed through a posterior approach, and early reports suggested that this procedure was an improvement on the former operation. However, more recent work has revealed a considerable gap in our detailed knowledge of the exact ganglia in which the relay occurs of those sympathetic fibres destined for the arm. The expected advantages of the new operation have not been entirely realized, and doubt has arisen about whether these various operations are pre- or post-ganglionic. Furthermore it would seem that it is possible to perform an equally effective though slightly less extensive operation through the more simple anterior approach.

Apart from Raynaud's disease sympathectomy is also of value in the treatment of certain other vasospastic conditions. In the few cases of acrocyanosis which warrant sympathectomy the results are usually better than in Raynaud's disease. The cold and paralysed limb which may result from anterior poliomyelitis is greatly benefited by sympathectomy. In cases of post-traumatic (Sudeck's) osteoporosis associated with a Raynaud-like phenomenon

1 *The Treatment of Epilepsy*, 1889. Edinburgh: Y. D. Pentland.
2 *Lyon chir.*, 1913, **10**, 378.
3 *Surg. Gynec. Obstet.*, 1924, **39**, 721.
4 *Med. J. Aust.*, 1924, **1**, 77.
5 Haxton, H. A., *Brit. J. Surg.*, 1947, **35**, 69.
6 Simmons, H. T., and Sheehan, D., ibid., 1939, **27**, 234.
7 Barcroft, H., and Hamilton, G. T. C., *Lancet*, 1948, **1**, 441.
8 *St Bart's Hosp. Reports*, 1938, **71**, 151.
9 *Lancet*, 1948, **2**, 717.
10 *Proc. R. Soc. Med.*, 1946, **39**, 488.

the operation is absolutely contraindicated. There is also little evidence to support its application to the treatment of chronic ulcers of the leg or of venous insufficiency following thrombophlebitis.

The value of sympathectomy in the treatment of organic arterial disease depends on a number of factors. The majority of arteriosclerotic subjects are old, their expectation of life is limited, and the risks of operation are greater. Even so lumbar ganglionectomy may be of distinct value in some of these cases. The operation is best reserved for patients under 60 and for cases showing good response to vasomotor tests; and there should be no ulceration or gangrene and an apparently sound myocardium. Lumbar ganglionectomy relieves rest pain, alleviates claudication in some cases, and it improves the blood supply to the muscles and to the toes. The abolition of sweating is also of value in preventing excessive cooling of the limb. Although as a general rule the operation will prove of less value in a patient with an absent popliteal pulse it is impossible to be dogmatic about this, and successes have been recorded in some of the most unpromising cases, the prognosis being better in those cases of popliteal block with a warm foot. It would seem likely that the legs are better able to stand up to minor trauma and the insult of further arterial occlusion after sympathectomy, and the surgeon should not be too readily influenced by the clinical state of the pulses, basing his assessment rather on the results of vasomotor tests.

Lumbar ganglionectomy is of value in many cases of thromboangiitis obliterans, although it would not seem to have any significant effect upon the general course of the disease. The risks of operation are slight in the younger age groups affected by this disease, and it is worth doing almost anything which will improve the circulation. The operation is contraindicated, however, in cases with severe arterial insufficiency and gangrene of the digits. The best results are seen in those cases with mild rest pain, minimal ulceration, and a slowly progressive disease. In both arteriosclerosis and thromboangiitis obliterans it is clear that success is dependent on the number of arteries capable of undergoing dilatation and unaffected by gross disease. Total blockage of the popliteal artery will not prevent the recovery of reasonable function so long as there is a good collateral circulation and the progression of the arterial changes is slow. The prognosis will also be influenced by the ability of the patient to live within the limits imposed by his disease. In thromboangiitis obliterans Boyd[8] differentiated between proximal and distal types of disease and suggested that the prognosis is better in the latter cases. This has been confirmed in the follow-up of a recent series published by Kinmonth[9]; it should be stressed, however, that such subdivision of cases may sometimes be fallacious, because a number of the so-called "proximal" cases may also have some undetected damage to the distal vessels.

Finally, it is necessary to consider the application of sympathectomy to the treatment of acute arterial conditions. In wounds of the peripheral arteries it was suggested that a suitable sympathectomy performed at the time of the primary operation might open up the collateral circulation and obviate reflex vasospasm. This is an appealing argument which has been strongly supported by Boyd,[10] but it has not found general favour; and it would seem easier to treat such cases by paravertebral sympathetic block should sympathetic interruption be considered desirable. Similar arguments apply in the case of ligation of the major arteries, where the procedure is of possible value, and also in arterial embolism, although in these cases the condition of the patient would usually suggest paravertebral block in preference to sympathectomy.

REMUNERATION OF SPECIALISTS

The Ministry of Health has at last issued its proposed terms and conditions of service for consultants and specialists in the National Health Service. The proposals have been drawn up after preliminary discussions with the Joint Committee of Consultants and Specialists, but do not represent final agreement. They are published in this week's *Supplement* for the information of the profession, and after the various professional bodies have examined the proposals the Joint Committee will put its considered views before the Ministry.

The report of the Spens Committee on the remuneration of consultants and specialists was published nearly a year ago, and since July, 1948, consultants and specialists have been anxiously awaiting the Ministry's interpretation of this. The task of the Spens Committee was to determine the range of total professional remuneration which should be applied to consultants and specialists in any publicly organized hospital and specialist service. The Committee, in determining this, had to take into account financial expectations in the past, and also "the desirability of maintaining the proper social and economic status of specialist practice and its power to attract a suitable type of recruit, having regard to other forms of medical practice." The recommendations of the Spens Committee were made in terms of the 1939 value of money, and the Report emphasizes as strongly as possible that adjustments necessary "should have direct regard not only to estimates of the change in the value of money but to the increases which have in fact taken place since 1939 in incomes both in the medical and in other professions." In this connexion we may note the Chorley Committee's proposals for remunerating higher Civil Servants, which have been accepted by the Government. The salaries of permanent secretaries and deputy secretaries in Government Departments have been increased by 50% above the salaries of these officers in 1939. It is not unfair to assume from this that the Government regards 50% as a reasonable betterment factor.

For staff specialists the Spens Report recommended that incomes should range from £1,500 to £5,000 a year. The upper limit of this range was to be secured for 4% of consultants and specialists by the addition of a special award of £2,500. Staff specialists appointed at the age of 32 were to receive a starting salary (that is, for a whole-time appointment) of £1,500 a year, rising by annual increments over eight years until at the age of 40 a salary of £2,500 a year would be reached. After the age of 40 consultants and specialists would be eligible for the special awards. In addition to the award for the 4% there were to be awards of £1,500 for 10% and £500 for 20% of consultants and

specialists. If we compare with the Spens recommendations the Ministry's present proposals, which are to be referred to the various bodies and committees which represent consultants and specialists, we see that the basic salary range for consultants and specialists is now £1,700 at the age of 32, rising to £2,750 a year at the age of 40. The latter figure in this basic salary range is the maximum accepted by Sir Stafford Cripps for full-time clinical professors.[1] The increase over the Spens figure is 13% at the start and 10% at the finish. If allowance is made for the 8% which is the contribution of the Government to superannuation it is seen that a betterment factor of 22% is applied to the starting salary, and of 19% to the salary reached at the age of 40. The special awards remain as they are. On the Ministry's present proposals 4% of all consultants and specialists, on the assumption of whole-time employment, would receive an annual income of £5,250. It is as well to recall that these awards are open also to those who serve part-time in the consultant and specialist service, adjusted in proportion to the income they earn as part-time workers. Whole-time clinical professors, lecturers, and readers are to be paid the salaries recommended by the University Grants Committee to the Chancellor of the Exchequer; in addition they will get appropriate expenses for hospital work and also be eligible for the distinction awards. Those who hold part-time clinical teaching posts will receive remuneration in recognition of their teaching duties. As the cost of living for the middle and professional classes has risen by 85% since 1939 consultants and specialists are as unlikely as general practitioners to be content with a betterment factor which is 22% or lower at different points in the range of incomes recommended. Consultants and general practitioners have made joint representation on the betterment factor, and the B.M.A. has put to the Ministry of Health a request for a factor of 70% to be applied to the gross remuneration of general practitioners. Pending the results of the negotiations on this the medical profession will not fail to keep in mind the increase of the salaries of senior Civil Servants by 50% over what they received in 1939.

Although the Spens Committee was appointed to consider the remuneration of consultants and specialists it felt that it could not ignore that of potential specialists. Grouping these into three grades of medical practitioners whose training extended approximately from one to seven years after qualification, the Spens Report recommended a range of income for trainee specialists of from £600 to £1,200 a year in 1939 values of money. The Ministry of Health's proposed range is from £670 to £1,300 a year. Within this range the betterment factor varies between 20% and 17%. It is true that these proposals cannot be exactly compared with those, for example, of the Chorley Committee. But on the basis of this, and also on that of the Ministry's betterment factor of 34% for the general practitioners' gross remuneration in 1946 when the cost of living was up by 45%, now that the cost of living is increased by 85% for professional classes the case for a betterment factor of between 50% to 60% is indisputable on the Government's own reasoning.

The Ministry of Health has put forward new proposals for the remuneration of junior house officers, ranging from £350 to £450 a year for non-residential posts. For junior hospital medical officers who have held house appointments but are not trainee specialists a salary range of £700 to £1,000 a year (non-residential) is recommended; while for senior hospital medical officers undertaking clinical duties but "not of staff specialist status" the non-residential rate of payment is from £1,300 to £1,750 a year. Medical and deputy medical superintendents in general will be paid for clinical work according to their grading as specialists or senior hospital medical officers, and the Ministry's objective is to reduce to a minimum the time spent by medical staff on administrative duties.

The Ministry of Health document contains a number of detailed proposals for those working part-time in the Service and for domiciliary visits. On the basis of 11 half-days the method of assessing the remuneration is the same as that recommended in the Spens Report. In estimation of the number of half-days the time spent on travelling as consultant adviser to the Board and on visits to cottage hospitals will be included, but not, it may be noted, the time occupied in attending committees—already a heavy burden on those connected with hospitals. Some light relief is provided by the statement that part-time consultants and specialists will not be required to "clock in." Specialists who have no contract with the hospital board but may be called in because of their "unusual experience or interest" will be paid at the rate of 5 guineas a visit—"including any operative work, etc." No doubt those representing consultants will be at pains to define "any operative work" and also the all-embracing "etc." It would be rash to assume that a specialist with "unusual experience" would be eager to undertake "any operative work," not to mention "etc.," for a fee of 5 guineas. The fee for a consultant on a domiciliary visit is 4 guineas, with an additional 2 guineas for such procedures as the use of a portable *x*-ray apparatus, and 4 guineas for an obstetric operation. The maximum remuneration to be allowed for domiciliary visits is 200 guineas in any quarter or 800 guineas in any year. It is possible that this restriction is intended to prevent the possible abuse of the Service by patients who would demand a specialist's opinion on the slightest provocation; nevertheless, in some areas such a restriction might be to the detriment of the community.

There is space here to touch only on a few of the many other points in the Ministry of Health's proposals. It may be noted that in his contract of service a specialist will be given no fixed period of tenure. There are detailed regulations on such matters as holidays and sick leave; for example, no allowance will be paid to anyone who suffers an accident from "active participation in sport as a profession." This encouragement to the amateur in sport is to be welcomed; but apparently if the amateur who is injured can be accused of "contributory negligence" he will not receive financial sympathy. What group of arbiters is to decide that a man who breaks a bone playing rugger has done this through negligence? If a specialist in the Service is off duty because of ill-health he may be required to be examined by a doctor nominated by the

[1] *British Medical Journal*, 1949, 1, 403.

employing authority. Apparently free choice of doctor is to be denied to a specialist in these circumstances—a curious paradox. Again, an employing authority may take action on receipt of a report that the sick specialist "has been guilty of conduct prejudicial to his recovery." These kinds of proposals seem, in effect, to treat specialists and consultants as if they were irresponsible school-boys, and are informed with that lack of imagination which kindly critics see as one of the attributes of a Civil Servant. When it comes to expenses, for example, we note excessive caution in the requirement that a specialist will be able to recover car-parking fees only on production of a voucher. The mileage allowance is not likely to be accepted without considerable protest.

It is unfortunate that there has been such delay in the issue of the Ministry of Health's proposals. They will have to be closely scrutinized by the various bodies concerned; the views of these bodies will have to be collated and classified by the Joint Committee, whose task it will then be to thrash the matter out on behalf of consultants and specialists with the Ministry of Health. Just how long this will take it is not possible to say, but before everything has been settled consultants and specialists will have spent nearly a year in the Service without knowing exactly what their terms and conditions of service are to be. Apart from the many questions of detail which will have to be looked into closely the one matter of overriding importance is the size of the betterment factor. Government, Parliament, and people have demanded the National Health Service, and, having succeeded in obtaining it, they cannot escape their obligation to pay adequately the men and women who with some reluctance have agreed to work in it.

PARALYTIC POLIOMYELITIS

During the epidemic of poliomyelitis which occurred in this country in 1947 an effort was made to reassure the public by pointing out that few patients developed severe paralysis. McAlpine and his colleagues[1] found that only 26 out of 60 proved cases had paralysis of any kind; of these not more than one-third could be regarded as sufficiently severe for the residual paralysis to affect the patients' future. Although these figures have been widely quoted the fear of the disease is still out of proportion to its social significance. A large epidemic having now occurred, it becomes probable that as in the U.S.A. and Australia there will be recurring epidemics of poliomyelitis in this country, and the effect of reassuring statements is likely to decrease still further. So far no prophylaxis for this disease is available, and the principal measures that can be taken to prevent its spread are early diagnosis and subsequent isolation of all cases. A watch over all contacts for the development of any symptoms is an obvious corollary, but this may be impossible with the present number of doctors. For isolation to be really effective diagnosis must be made in the prodromal or pre-paralytic stage.

In a paper appearing elsewhere in this issue Dr. Ritchie Russell surveys the natural history of paralytic poliomyelitis and analyses the findings in 100 patients. These were all old enough to be questioned in detail—only eight being under 11 years of age. In this way he was able accurately to assess the day-to-day development. Like previous observers Dr. Ritchie Russell describes three stages of the disease—the prodromal, the pre-paralytic, and the paralytic. He found symptoms of the prodromal stage in fewer than half the cases, whereas McAlpine found such symptoms in about 70% of his patients. In any event the signs of a "cold," such as nasal catarrh, sore throat, mild pyrexia, and malaise, are so unspecific that it is questionable whether the diagnosis can be more than guessed at at this time. During an epidemic it is much easier to suspect the condition, but at such a time the diagnosis is made too frequently. Kelleher[2] found that in only half of 170 cases admitted as poliomyelitis could the diagnosis be confirmed, and McAlpine reported 44 cases out of 104 admissions. This erring on the safe side is to be encouraged so long as hospital beds are available.

The pre-paralytic stage must be regarded as the acute and critical period of the illness. Dr. W. Ritchie Russell argues that at this time the virus is multiplying in the central nervous system and the fate of spinal cells is being decided. The characteristic spinal and limb pains, fever, and malaise now develop. Unfortunately the symptoms and signs may be very slight, and the more robust the patient the easier it is for minor manifestations to be disregarded. Clinicians have already drawn attention to two points: (1) that pains are often greatest in the region which will be most severely paralysed; and (2) that great physical activity in the pre-paralytic stage of the illness is associated with severe paralysis. Dr. Ritchie Russell is now able to confirm these clinical impressions by statistical analysis. He goes even further and produces case records which clearly suggest that physical activity might bring on the acute pre-paralytic phase in a patient who would otherwise have an abortive attack with no more than prodromal symptoms or perhaps no noticeable symptoms at all. In the pre-paralytic stage activity will increase not only the severity but also the extent of the paralysis. It is clear, therefore, that the patients most likely to be affected are those who struggle on courageously but mistakenly during that early phase of their illness. These, as Dr. Ritchie Russell points out, are frequently those with the greatest powers of physical and mental endurance or, like the mother of young children, those who are most anxious not to be ill.

From this account it follows that the physiological state of the neurone is a most important factor in deciding its resistance to the virus. The histo-pathological studies of Scheinker[3] suggest how this may occur. He studied the whole nervous system in six cases of poliomyelitis and found a widespread inflammation of the tissues associated with localized parenchymatous destruction of motor elements. The latter is the well-recognized and frequently described lesion of the disease. He then showed that these two responses are independent—the former being a response to invasion, the latter demonstrating the specific lethal effect of the virus on neurones. Once the nervous system is invaded it is questionable whether anything can

[1] *British Medical Journal*, 1947, **2**, 1019.
[2] *Proc. R. Soc. Med.*, 1947, **40**, 931.
[3] *Arch. Neurol. Psychiat., Chicago*, 1947, **57**, 565.

be done to modify the general response: this must depend on the strain of the infecting virus, the size of the infecting dose, and the presence of any immunity acquired in previous subclinical infections. The phase of cell damage, however, can perhaps be modified by altering the physiological state in and around the neurone. Fatigue, cold, and trauma in the tissues supplied by the motor cells appear to be the most important circumstances which can be controlled; their presence appears to increase the paralysis and influences perhaps how far it spreads. It is therefore essential that complete rest should be enforced throughout the disease, and particularly in the early stages. Any attempt to "work off" the symptoms is condemned, and all school doctors, matrons, and camp medical officers must be made aware of this. Further, unnecessary trauma, such as injections and inoculations that are not vital, should be avoided.

When an epidemic occurs it is probable that hospital beds for acute cases can always be mobilized in sufficient numbers. Some patients are bound to develop severe paralysis even when the greatest care is taken, and difficulty arises when the time comes for them to be moved from the hospitals to which they were admitted. The regional hospital boards, when making their plans for the rehabilitation of patients suffering from prolonged illness, should make early and adequate provision for these patients. They require careful handling at all stages of convalescence and later industrial retraining under medical supervision.

PSYCHIATRIC INDICATIONS FOR ABORTION

Changes in the law relating to abortion were introduced in the new Swiss penal code which came into force in 1942. Article 120 permits abortion only in those cases where danger to the mother's life or great danger of suffering and lasting impairment of her health cannot otherwise be avoided. Thus the admissible psychiatric indications for abortion come within a compass closely corresponding to what holds in Britain. Abortion on eugenic, racial, or criminal grounds is expressly forbidden in the Swiss code, and Professor Glaus, of Zurich, who has recently reviewed the implications of the new law,[1] thinks that many physicians will regret that the admissibility of an abortion is entirely unaffected by whether or not a healthy child is to be expected or whether or not the pregnancy is the result of rape or incest. In this country the practice is to take a slightly wider view than that now permitted by Swiss law: though there is no acceptable eugenic indication for abortion, yet if a pregnancy were the result of rape the fact could be cited in support of a view, reached on other grounds, that the mother's mental health would probably be damaged by allowing the pregnancy to continue.

Social grounds for abortion have never been admitted in this country, but before the introduction of the new penal code for the whole of Switzerland it was permissible in the Canton of Zurich to take such grounds into account. Glaus suggests that now these indications are excluded social agencies ought to be able to help the mother to such an extent that abortion should not have to be considered, and he believes that Switzerland has not far to go to reach such an ideal state. This would also seem to be true of this country now that family allowances, maternity benefit, and a comprehensive health service are all available. Nevertheless the over-prolific family will continue to suffer hardship, and for this the Swiss provide the remedy of sterilization; this operation is as yet carried out only in very exceptional cases in Britain, nearly always for a purely medical indication.

In his discussion of admissible psychiatric grounds for abortion Glaus makes a number of comments which are of interest to doctors in this country. Danger to life will arise almost only through the risk of suicide, and this danger will be better overcome as a rule by admission to hospital than by interruption of pregnancy. In Britain admission to hospital is not always so easily arranged, and some patients who have suicidal tendencies but yet are hardly certifiable because of a lack of other evidence of mental disorder may not accept voluntary treatment. In such cases it is often difficult to decide whether abortion is justifiable. Danger to health of the most definite kind arises most commonly in psychotic patients. Nevertheless Glaus believes that adequate grounds for abortion will be very rare in manic-depressive patients, and will be present in schizophrenics only when a previous pregnancy has released a psychotic episode or where an existing schizophrenia is, under direct observation, being worsened by the pregnancy. In epilepsy the question of abortion will be decided by whether or not the fits become more frequent or severe during the pregnancy. Affective psychoses released by pregnancy in mentally retarded and defective patients not infrequently have a very doubtful prognosis and are an adequate indication for abortion. In neurotic reactions arising from the conflict situation Glaus believes that abortion should be considered only in exceptionally serious cases, where social measures are likely to be ineffective and where the personality is of a kind particularly sensitive to psychological stresses and with small power of resistance or adaptation. Few patients would fall into this class. Emotionally distressed women who are refused abortion may later recover completely.

The Swiss law states in definite terms that there must be great danger of severe and lasting impairment of health. In Britain we have not the guidance of a precisely formulated law, clinical practice being governed to a considerable extent by precedent and by public opinion on what is ethical. At present most psychiatrists would admit as adequate reason for abortion a serious risk of damage to maternal health, even if that impairment of health would not be irremediable. This implies a considerably greater latitude than is given in Switzerland, where some may consider the law already allows sufficient scope. It may be that a somewhat wider use of sterilization in women who are unfitted to bear and to rear children would reduce the number of occasions when difficult decisions have to be taken about the therapeutic termination of pregnancy.

[1] *Schweiz. med. Wschr.*, 1948, **78**, 97.

AUSTRALIA'S DECLINING BIRTH RATE

The recent emigration of a large number of Britons to Australia reminds us that with a population of little over seven million in a territory of three million square miles Australia has good reason to be troubled by a fall in the birth rate. A few years ago, when the decline became manifest, the Federal Government sought the help of the National Health and Medical Research Council at Canberra. The Council then began an inquiry into the incidence of primary sterility in both males and females; the extent of the practice of contraception; the causes of miscarriages, stillbirths, and neonatal deaths; the influence of medical, surgical, gynaecological, or obstetric conditions on the birth

[1] The National Health and Medical Research Council. *Report of the Committee of Inquiry into the Medical Aspects of the Decline of the Birth Rate.* Special Report Series No. 4. Canberra. 1948.

rate; and the part played by nutrition in successful childbearing. The facilities available for the investigation of primary sterility were found inadequate to provide a basis for any statement on the subject, although, since the first inquiries were made in 1944, a number of clinics have started work. Details of the inquiry into contraception have already been published. Of the sample of women studied, over 60% admitted the use of contraceptives, and it was found that this did reduce the pregnancy rate compared with the rate for women who did not use contraceptives.

Another report[1] has now been issued which discusses the effect of nutrition upon the course and results of pregnancy and the causes of stillbirth and neonatal mortality. Of the pregnancies investigated 18.6% terminated either in stillbirth or miscarriage. The expert committee took the prenatal clinics of the Women's Hospitals at Sydney and Melbourne as offering material for inquiry into the nutrition of the expectant mothers and into the influence of medical conditions on pregnancy and parturition. While a relatively large number of women attending the clinics showed initially a marked degree of anaemia, this did not seem to bear any relation to their diet. Nutrition played an important part in the development of the toxaemias of pregnancy, the incidence being much higher among those whose diet during pregnancy was unbalanced. It was also shown that a well-balanced diet predisposed to more efficient lactation. But the investigators reached the conclusion that the level of pre-natal nutrition in Australia is not an important factor in predisposing towards the occurrence of stillbirth, neonatal death, or foetal abnormality. No correlation could be found between the diet during pregnancy and the maternal gain in weight, trend of haemoglobin levels, intercurrent diseases, complications during labour, infections during the puerperium, or the birth weight or growth curve of the infants. This result, of course, is at variance with the findings in other countries, and the reason given is that in Australia the proportion of "poor diets" is much smaller than that obtaining in surveys published elsewhere. The patients on whom the study was made were ordinary hospital patients, but they must have come from socio-economic groups much above those of the women concerned in similar records in recent years in Toronto or in Aberdeen.

Prematurity is given as the most important single cause of neonatal deaths and to a lesser degree of stillbirths. It is urged that measures be taken to investigate the causes of prematurity for which at present there is no apparent explanation. Attention is drawn also to the inadequacy of the prevailing definitions of the premature baby. Other recommendations call for increased facilities for prenatal care, the investigation of haemoglobin levels of pregnant women, and indeed of all women capable of childbearing, the registration of all stillbirths, and a post-mortem study in every case of infant death. The setting up of special hospitals for the care of premature infants in each capital city and in the large country centres is also advocated.

Australia is in advance of Great Britain and of Canada in her figures for infant mortality. The Australian figure for 1945 was 31.3 per thousand births; the figure for England and Wales for the same year was 46. But Australia was beaten by New Zealand in this respect, and therefore feels that in some way it is still lagging behind in the application of improved methods of care. It is asked whether it is possible that, in the zeal for improving maternal mortality, the welfare of the offspring has been overlooked. But in maternal mortality Australia has not reached the level of this country. The maternal death rate in England and Wales in 1945 was 1.80 per thousand births and in Australia it was 2.13. The neonatal mortality seems to be the most obstinate factor in both countries, though in England and Wales during the last five years it has declined from 25.2 per thousand to 22.7, and in Australia, too, there has been a steady improvement during the same quinquennium.

CARDIAC PAIN IN WOMEN

Effort angina and coronary thrombosis are less common in women than in men, though with the passage of time the preponderance of men appears to be decreasing. Thus Mackenzie[1] in 1923 found a ratio of 7 men to 1 woman with angina of effort, and in 1928 Parkinson and Bedford[2] found only 7 women in 100 cases of coronary thrombosis. But in 1943 figures supplied by the Toronto Health Department[3] indicated a 2 to 1 ratio of men to women. Changes in sex incidence, as with changes in the frequency of coronary thrombosis as a whole, are difficult to establish, but it does seem clear that cardiac pain of all kinds is much more frequent in men, though the difference becomes less as age advances. It is also well established that effort angina is a particularly rare occurrence in women unless associated with hypertension. These views are confirmed by Summers,[4] who found only three patients under 40 years of age in a series of 87 cases of angina of effort occurring in women, 84% of whom had hypertension. The three patients under 40 had diseases other than coronary sclerosis which could account for the pain—two had anaemia and one aortic incompetence. If a woman with a normal blood pressure has chest pain suggesting angina of effort, such a diagnosis must be made with reserve and a search made for some structural change other than coronary disease. Angina depending on anaemia—and there is no doubt this may be the sole cause of the symptom—while rare, is of particular importance, since cure of the anaemia may completely relieve the pain. The reason why men are affected so much oftener than women has never been explained. Summers was unable to find any connexion between smoking and alcohol and angina in his female patients, or with occupation, but McCormick thought that the increase in tobacco consumption by women might be responsible for the apparent recent change in the sex incidence.

THE DAWSON WILLIAMS MEMORIAL

The Dawson Williams Memorial Fund was established by voluntary subscription in 1928 to commemorate Sir Dawson Williams, who was Editor of the *British Medical Journal* from 1898 to 1928. The object of the Fund is to award a prize every two years or at longer intervals in recognition of work done in paediatrics. The last award was made in 1938 to Professor (now Sir) Leonard Parsons for his researches into diseases in children. No award was made during the war years, and the trustees of the Fund have now made two awards for 1948—to Professor Alan Moncrieff for his work for child health, and to Professor J. C. Spence for his researches in diseases of children—a prize of 60 guineas being given to each recipient. The Fund is administered by the following trustees: The Presidents of the Royal College of Physicians of London, the Royal College of Surgeons of England, the British Medical Association, the Royal Society of Medicine, and the Section for Disease in Children of the Royal Society of Medicine, and the Editor of the *British Medical Journal*.

1 *Angina Pectoris*, 1923, Oxford University Press, London.
2 *Lancet*, 1928, **1**, 4.
3 McCormick, W. J., *Un. med. Can.*, 1945, **74**, 1205.
4 *Brit. Heart J.*, 1948, **10**, 4.

THE ECONOMICAL USE OF THE HOSPITAL BED AND OF THE NURSE*

BY

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Much of the content of this memorandum is not new matter. We have, however, deliberately attempted to incorporate a brief reference to the more important aspects which bear directly on the problem of the shortage of nurses. We have done this because we are strongly of the opinion that this problem is not resolvable by piecemeal approach, and that its solution depends upon a simultaneous attack on all its various angles as revealed in a survey which must of necessity be wide.

Although the qualitative and quantitative needs of the nursing profession have already received consideration [see the memorandum on "Recruitment and Training of Nurses," submitted to the Ministry of Health jointly by the B.M.A., the B.H.A., and the Medical Superintendents' Society (Part II, Paras. 5–10)—and Addendum by the B.H.A.] it is in connexion with the quantitative aspect that the wider survey is essential.

First the unwelcome fact must be realized that the supply of nurses, actual and potential, if used as hitherto, is and will remain inadequate on account of the woman-power position, as is starkly evidenced by official statistics. In consequence it becomes imperative to view the problem of nurse-shortage not only from the aspects of recruitment and training but also from other closely related aspects, in particular the economical use of the nurse and of the hospital bed. It is convenient first to consider the latter factor.

A. Economical Use of the Hospital Bed

The Nature and Purpose of a Hospital .e may have been an undue tendency to regard a hosp as primarily a place which provides beds for the reception of the sick—with the specialist and ancillary services as an aid to diagnosis and treatment *after* admission—and so to measure the scope and importance of the individual hospital in terms of beds. The consultative and therapeutic facilities in out-patient departments—which, with a few notable exceptions, have been confined to the erstwhile voluntary hospitals—have not been sufficiently developed as one of several means of affording some relief on bed pressure and also as a means of extending the scope of the work of a particular hospital. We stress the importance of relieving bed pressure not only because a vast growth in the number of available hospital beds is unlikely within the next decade but also because the mere addition of beds itself aggravates the problem of the shortage of nurses without necessarily securing the more efficient provision of hospital treatment. This part of our survey is therefore concerned with any measures which, without undue inconvenience to the patient, can be employed to secure a more economical use of hospital beds at present available.

Out-Patient Departments.—While avoiding extremes, it is possible to regard a hospital more as a polyclinic with beds than as a ward-nucleus with ancillary departments. This approach paves the way to greater discrimination in the selection of patients for admission to wards for acute cases, as contrasted with admissions to a hospital bed of some kind or other. A general extension of consultative and therapeutic out-patient facilities to the hospitals that do not at present possess them is therefore a first step towards avoidance of the admission of patients to a hospital bed in default of other facilities for treatment. The out-patient department also provides the services for determining what type of accommodation is appropriate where admission is necessary, and is therefore a twofold factor in promoting the economical use of the existing beddage. Even if health centres were ultimately developed along lines which included much of the consultative specialist service at present available only in hospital out-patient departments, the latter would still be necessary, partly as a screen to determine the nature of the accommodation appropriate to the individual patient and partly to provide out-patient treatment in relief of beds.

Short-stay Hostels, Recovery Annexes, or Convalescent Hospitals, and Provision of Various Kinds for the Chronic Sick and for the Elderly and Infirm.—In respect of these three items as aids to the economical usage of "acute" hospital beds, to avoid repetition we would only refer with general agreement to the B.M.A. memoranda "The Care of the Elderly and Infirm" and "The Right Patient in the Right Bed." In particular, we think that in a variety of cases much more use could be made of the patient's own home if appropriate procedures for care, visiting, and supervision were thought out and applied. The services of the voluntary worker could be especially useful in this field. For instance, in the neighbourhood of the St. Helier group of hospitals a "meals on wheels" service for chronic invalids in their own homes has been started by the W.V.S. This domiciliary scheme, with the backing of district nurses and home helps, is reproducing in the home many of the facilities normally available only to hospital in-patients. It is hoped soon to include a laundry service, and already, with the aid of transport, much that the hospital has to offer, both of consultative advice and of treatment, is being made available to these patients without ever admitting them to its wards. We would lay great emphasis on the need for utilizing to the full all such resources as may protect the acute hospital bed from use for other than its proper purpose.

Administrative Procedure of Admission to Beds.—The economical use of beds (i.e., avoidance of wastage by non-occupation between discharges and admissions and by over-lengthy stay) is largely dependent on efficient administrative arrangements for admissions, and on the existence of sound contacts between the administration and the clinicians in charge of beds. Regional bed bureaux perform a most useful function in dealing with emergencies; but admissions, or acceptance of responsibility for alternative arrangements, should normally be undertaken at management committee (or where necessary at component unit) level, and thus the group would be imbued with a sense of its responsibility to the sick in the geographical area which it is intended to serve.

The Hospital Group.—It may well be that the principle of grouping provides the National Health Service with its greatest opportunity for improvement in hospital resources. The initial grouping of hospitals—to enable the Service to operate on the appointed day—was necessarily undertaken at short notice. It is therefore reasonable to hope that the groupings themselves, and the purposes for which beds may have been initially allocated, may be subject to review and readjustment in the light of experience. Since one at least of the purposes of grouping hospitals is to provide an integrated and more comprehensive service, it follows that the group must within itself provide, *inter alia*, suitable alternative accommodation for patients requiring admission but not admission to an acute ward.

For example, it may be possible to increase the output from the group as a whole by the provision, even from its existing resources, of beds in recovery annexes or convalescent hospitals so as to make the fullest possible use of the specially equipped and staffed acute beds. Or, again, it may prove necessary to supply a group with ancillary accommodation—e.g., of hospital-recovery type—at present non-existent. And, yet again, the question of invalid settlements and long-stay annexes for the chronic sick and of their contiguity to one or more of the well-equipped hospitals in the group requires urgent consideration and solution. Underlying all such considerations is the necessity on the one hand to have regard to the convenience of the patient—e.g., by avoidance of long journeys and of undue separation from relations—and on the other hand to facilitate continuity of medical supervision of his case.

The group can in our view greatly increase not only its total output but even its range of service if individual clinical departments have a balanced complement of acute and recovery (or long-stay) beds—not necessarily all within the same curtilage

*This memorandum was originally prepared for, and is now under consideration by, the B.M.A. Committee on Nursing, of which the joint authors are members.

—to meet their particular requirements. This is supported by experience gained in the thoracic unit at St. Helier Hospital.

Nurse-Staffing for the Hospital Group.—A further consideration in the matter of grouping which is of fundamental importance in connexion with the nursing problem is that the group must be of such size and be so arranged that it is reasonably self-contained for its purpose, but able to regard itself as one entity. Each group should therefore provide its own nurse-training school. Since the formation of a particular group may be much affected by local conditions it would be unwise to dogmatize on such matters as maximum size. What does matter—and in particular from the point of view of nurse-staffing—is that the group should be a close-knit body with a strong *esprit de corps* and a full sense, both at its centre and throughout its components, of a common duty to the neighbourhood which it serves. This set-up will facilitate the circulation of the nursing staff throughout the component units of the group in a manner comparable with the established practice of posting from one ward to another in the same hospital.

Where a group is centred round a "special" hospital the position regarding its nurse-training school must remain as dealt with in Paras. 22–23 (Part III) of the memorandum on "Recruitment and Training of Nurses." Where for some reason a group is not self-contained interworking between contiguous groups may be necessary, particularly for certain types of specialized investigation and treatment; but such interworking should *not* involve the transfer of nursing staff from one group to another.

The higher output obtainable from the acute wards by greater selectivity of admission, the provision of recovery annexes, etc., would, generally speaking, involve an increase in the nursing staff of the acute wards which in some cases would be substantial. This need for more staff in one section may, however, be more than offset by economies in nurse-staffing in other directions, as shown in Section B below.

B. Economical Use of the Nurse

This part of our memorandum deals with a more difficult aspect of the problem, and one which is more open to controversy. We therefore approach it from the point of view of exploration.

The Nature of Nursing

It is impossible to approach the matter of the economical use of the nurse without some agreed conception of the essential nature of the nurse's work. No definition has so far been offered in reply to the questions so often asked recently on precisely what nursing is and what is the function of the nurse.

Without attempting a precise definition we would suggest that nursing comprises two main and distinct functions: one is to minister to the patient's comfort; the other is to assist the doctor in safeguarding the patient and in the progress of the case. It is on this conception of nursing that we base the considerations which we venture to submit below. Nor is this basis merely hypothetical, since it accords with actuality. To illustrate the point, at one side of the scale there are untold numbers of infirm and sick people who are daily nursed in their own homes by relations or friends. The services thus rendered relate, though not exclusively, to requirements connected with the patient's comfort. This contrasts with the other side of the scale, where the highest degrees of nursing skill are called for.

It follows, therefore, that the division of nursing function as between comfort and skill enables nursing requirements themselves to be subdivided into those of skilled nursing and unskilled nursing. It therefore becomes possible to consider in practical terms how waste of skilled nursing can be avoided by ensuring that it is applied only where required and that full use is made of unskilled nursing wherever appropriate.

Is it possible, as a primary step towards the economical use of the skilled nurse, to approach the problem of nursing staff in the wards—no matter what their type—in such a way that the highest degree of nursing skill is combined with the unskilled devotion met in the home? In our view this is possible, and is indeed inevitable; but its achievement depends upon factors which may involve a reorientation of view and may even be regarded by many as revolutionary. For example, the skilled nurse will need to have a greater realization of the two-sided nature of her work. One side, of course, is the exercise of her skill on a particular patient requiring it; the second side is the avoidance of wasting her time on duties which fall within the competence of others not possessing her skill. This involves a conscious realization of her nursing duty as a supervisor of unskilled nursing and is the starting-point in the economy of effort, since unless she is trained in the art of delegation the skilled nurse cannot make the greatest or the most effective use of her own training and experience.

These considerations apply strictly to economy of skilled practical bedside nursing and are not intended to refer to ward administration or to imply the up-grading of a staff nurse into a junior ward-sister.

Nursing Aides

It being established that the skilled nurse must herself exercise a discretion regarding which of her patients require more of her personal attention and which require less, there follows the need to provide her with appropriate personnel to whom she can delegate. Under no circumstances must the nursing aide be confused with the domestic or semi-domestic ward worker. His or her alignment should, on the contrary, be intrinsically with the ward nursing team. A proper—ever safe—use of the nursing aide cannot, however, be made unless the right type of recruit is attracted to the work (quite as much a question of status as of pay), and unless the general orbit of the aides' duties is clearly demarcated and they receive adequate encouragement and a short preliminary training. Actual experience of their satisfactory use appears to have been obtained by hospitals that have seriously addressed themselves to the experiment.

Non-Nursing Duties

We have avoided referring to matters of smaller moment, obvious though they are in themselves: for example, elimination of the practice of employing nurses on non-nursing duties, such as chaperonage and certain administrative work. We would, however, make passing reference to the importance of a memorandum by King Edward's Hospital Fund (*Lancet*, Aug. 14, 1948, p. 266) on the loss from hospitals of newly trained staff, and to their plea for the employment of suitably trained non-nursing personnel in the public health nursing field wherever possible.

Conclusion

The idea that a person without a nursing qualification should be allowed, either nominally or actually, to undertake any form of nursing duty may at first glance be distasteful to many. At the risk of repetition, however, we would once again stress the fact that, on account of the woman-power position alone, nursing requirements cannot be met unless measures of this kind are studied, evolved, and implemented. It is sheer necessity that is the spur. Surely it is better to make a virtue of necessity and to solve the problem by its frank realization.

Summary

The problem of nurse-shortage can be solved only by multilateral approach.

Two aspects of this problem which have as yet not received due attention are the economical use of the nurse and the economical use of the hospital bed.

The economical use of the hospital bed can be achieved by (*a*) the conception of a hospital as a polyclinic with beds rather than as a ward-nucleus with ancillary facilities; (*b*) economy in the use of beds in well-equipped hospitals by a greater selectivity of admissions; (*c*) the provision of a balanced bed complement—within the group—e.g., acute, recovery, and long-stay; (*d*) the provision of short-stay hostels in conjunction with out-patient departments; (*e*) the provision of various kinds of accommodation for the chronic sick of all ages and for the elderly and infirm; (*f*) efficient administrative procedure for admissions to avoid wastage of beds.

The group must form one entity, as this is essential to (*a*) *esprit de corps*; (*b*) nurse-training and staffing; (*c*) the shouldering of responsibility for the sick in its area.

The economical use of the nurse may be achieved by: (*a*) recognition of the fact that not all nursing is skilled nursing; (*b*) recognition that the duties of all skilled nurses should include a supervisory function; (*c*) provision of appropriate personnel to whom unskilled nursing can be delegated under supervision; (*d*) recognition of the importance both of the training and of the status of the nursing aide.

As official woman-power statistics show, the problem of nurse-shortage demands a fresh outlook if it is not to remain intractable.

THE KING'S HEALTH

OPERATION FOR LUMBAR SYMPATHECTOMY

The following bulletin was issued from Buckingham Palace on March 8:

The King's general health continues to be excellent.

In the left leg the flow of blood has been restored in the main arteries to a satisfactory degree.

In the right leg the main artery is still obstructed and the circulation is being carried on, less efficiently than in the left leg, through a collateral circulation.

With a view to improving the blood supply to the right foot, and to safeguard this for the future, we have advised his Majesty that the operation of lumbar sympathectomy should be performed on the right side. The King has accepted this advice and the operation will be performed at an early date.

MAURICE CASSIDY. J. R. LEARMONTH.
THOMAS DUNHILL. J. PATERSON ROSS.
HORACE EVANS. JOHN WEIR.

On Saturday, March 12, the next bulletin stated:

The operation of lumbar sympathectomy was performed on the King at 10 a.m. His Majesty's condition is entirely satisfactory.

MAURICE CASSIDY. C. J. LONGLAND.
THOMAS DUNHILL. J. PATERSON ROSS.
HORACE EVANS. A. J. SLESSOR.
JOHN GILLIES. JOHN WEIR.
J. R. LEARMONTH.

A further bulletin, issued on Saturday evening, read:

The King has had a restful day. Temperature, pulse, and respiration rate have not varied from normal, and his Majesty's recovery from the operation is proceeding smoothly.

MAURICE CASSIDY. J. R. LEARMONTH.
THOMAS DUNHILL. J. PATERSON ROSS.
HORACE EVANS. JOHN WEIR.
JOHN GILLIES.

A bulletin issued on Sunday morning stated:

During the night the King has had periods of sleep. Temperature, pulse, and respiration are normal. His Majesty's condition and progress are those usual after lumbar sympathectomy.

MAURICE CASSIDY. J. R. LEARMONTH.
THOMAS DUNHILL. J. PATERSON ROSS.
HORACE EVANS. JOHN WEIR.
JOHN GILLIES.

Further bulletins issued on March 14 and 15 confirmed that the King's general condition remains satisfactory.

It is understood that the operation was performed by Professor J. R. Learmonth, professor of surgery at Edinburgh University, with Professor J. Paterson Ross, professor of surgery at London University. The anaesthetist was Dr. John Gillies, director of the department of anaesthetics at the Royal Infirmary, Edinburgh. Professor Learmonth had the assistance of Dr. A. J. Slessor, medical superintendent and assistant surgeon to the Western General Hospital, Edinburgh, and Professor Ross was assisted by Dr. C. J. Longland, first assistant in the surgical professorial unit of St. Bartholomew's Hospital.

Professor Learmonth remained at the Palace throughout Saturday night and Sunday.

TUBERCULOSIS IN ENGLAND AND WALES

MINISTRY STATEMENT

A recent statement issued by the Ministry of Health points out that the present situation regarding tuberculosis in England and Wales needs to be judged against the background of the progress made during the period between the two world wars. Between 1918 and 1939 the number of deaths from all forms of tuberculosis fell from about 58,000 in 1918 to about 25,600 in 1939. Then in 1940 and 1941 the number of deaths rose to over 28,000. This increase, however, was checked, and the figures for 1942, 1943, and 1944 were approximately 25,500, 25,600, and 24,100. The fall continued in 1945 and 1946, when deaths numbered 23,955 and 22,847, respectively, rising slightly in 1947 to 23,550.

These mortality figures are the most reliable criterion of the trend of tuberculosis, as against the numbers of notifications of the disease, which are not necessarily an accurate reflection of its incidence. It is observed, however, that the numbers of deaths in the war years, unexpectedly favourable though they were, were higher than they would have been if the pre-war rate of decline had continued; the number of notifications rose above and still remains above the pre-war level. In 1918 the total number of formal notifications was about 90,000; in 1938, about 50,000; and it has since been as follows:

1939	..	46,000	1944	..	54,000
1940	..	46,600	1945	..	52,000
1941	..	51,000	1946	..	51,300
1942	..	52,600	1947	..	51,700
1943	..	54,000			

The relation between respiratory and non-respiratory types of tuberculosis, which hitherto has shown no substantial deviation from year to year (although such a factor as increasing pasteurization of milk may materially affect the incidence of non-respiratory tuberculosis as time goes on), may be gauged from the fact that in 1947, of the total of 23,549 deaths, 20,156 were due to respiratory tuberculosis.

The admission of patients to tuberculosis institutions for treatment with reasonable promptness continues to present a serious problem. The reason for this is not the lack of sufficient accommodation but the persisting shortage of nurses. The number of patients under institutional treatment at June 30, 1948, was about 29,200, while the number on the waiting-lists for such treatment was about 9,000. The number of new patients who came on the registers of tuberculosis dispensaries in the quarter ended June 30, 1948, was about 13,000.

Developments in the Tuberculosis Service

The introduction in 1942 of mass miniature radiography to detect respiratory tuberculosis in its earlier stages constituted an important advance. Owing to the wartime limitations on the production of the apparatus and on the availability of medical man-power it has been possible to provide these mass radiography units only gradually in selected areas of the country. By Dec. 31, 1948, there were 37 of these units in operation in England and Wales, and the Ministry itself operates one at a fixed centre in London as a training and research unit. By June 30, 1948, about 2,500,000 persons had been examined, of whom approximately 94% were found normal at the time of examination. The number of cases in which clinical investigation following evidence of abnormality in the miniature film led to diagnosis of active tuberculous conditions was approximately 9,564, or between 3 and 4 per 1,000 of all the persons examined.

Under the National Health Service Act the responsibility for the tuberculosis treatment services—namely, institutional and out-patient services, including the mass radiography service—passed on July 5, 1948, from county and county borough councils to the regional hospital boards, though the local authorities remain responsible as the local health authorities under the Act for the preventive and care and after-care work in relation to tuberculosis.

Under the National Assistance Act, persons who suffer a loss of income in order to undergo treatment for respiratory tuberculosis and need financial help over and above such statutory

payments as national insurance benefit and family allowances are able to obtain this through the National Assistance Board. The main object of this assistance is to afford a reasonable standard of maintenance for the patient and his dependants during the period of treatment so as to encourage the sufferer, for both his own and the community's sake, to give up work to undergo early treatment.

Nova et Vetera

HOW DID SCIENCE BEGIN?

Many must wonder why medical historians continue to pour out investigations of the writings of Vesalius. They must often ask, "Are they not coming to an end of Vesalius?" The simple answer is "No." This review of Professors Saunders and O'Malley's book* may explain why this is so.

It is quite obvious now to us all that the value of any theory concerning natural events or objects rests on facts established by observation and on their adequate presentation. But, strange as it may seem, this was by no means evident before the seventeenth century, when Francis Bacon and René Descartes delivered their messages. Till then men were educated in the scholastic tradition. This taught them that, in matters of the world of the senses, having made sure of the premises, they might safely reason therefrom for an indefinite time and—provided of course that they had made no error of logic—they might then return again to the world of the senses and safely apply the conclusions that they had reached.

One reason why they thought along such lines was that they conceived the world of the senses to be much simpler than we now know it to be. Another reason was that they did not realize how extremely difficult it is to be sure of the premises. But for these reasons, among others, research into the supposedly simple scheme of Nature afforded little temptation to men of subtle minds. These naturally preferred the infinite possibilities of theological, ethical, philosophic, or linguistic discussion. They considered it a less worthy vocation to investigate the realm of things than the realm of thought. Perhaps they were right. But it is certainly true that not only does research in the world of things yield more rapid and more tangible results, but also that history has shown that it has profoundly influenced our conception of the world of thought.

Now this "scientific" view did not occur suddenly to the men of the seventeenth century. On the contrary, for at least a hundred years before Bacon and Descartes there had been men who were feeling their way in that direction and yet failing to express their conclusions with clearness or to apply them with any considerable success. But in this matter 1543 was an *annus mirabilis*, for within a few days of each other the aged Copernicus (1473–1543) sent out his treatise *On the Circulations of the Celestial Spheres* and the youthful Vesalius (1514–64) issued his magnificent folio *On the Workings of the Human Body*. These are the two foundation works of modern science. The outlook of Vesalius, younger by 41 years, is the more modern of the two. Though still "intellectually enmeshed in the difficulties which the lack of a clearly formulated scientific method had woven," as our authors truly say, he produced a great work of research in the modern sense. Anything that helps to explain how this came about is thus significant not only for medical history but also for the history of science and, even more, for history itself, since science has been a major factor in the moulding of the modern world.

It is therefore extremely important to trace, completely and exactly, all the processes—mental, social, personal, political—by or through which Vesalius, starting as a scholastic, became a scientific inquirer. He is the ideal subject for the investigation of the beginnings of science. The materials exist, but their elucidation presents very special technical difficulties. With the nature of these we are not immediately concerned, but no one has made more significant contributions to their solution than Professors Saunders and O'Malley. They would be the first to allow that it must be many years before the problems with which they deal are finally resolved. The obstacles are far greater than earlier writers on Vesalius imagined, and very much more work is needed before the embryology of the inductive method can be set forth at all adequately. This book completes a stage in this task—a stage which its authors are uniquely equipped to accomplish. They have done a real service both to history and to the understanding of the evolution of the modern mind.

The earliest works of Vesalius are an edition of a work on anatomy by one of his teachers and a set of anatomical diagrams. Both appeared in 1538, and show him as a fairly typical scholastic, basing his views chiefly on his teacher's Latin translations of Greek texts of Galen. But in the *Bloodletting Letter* of 1539, which Professors O'Malley and Saunders now translate, edit, and annotate, he advances a little on the scholastic position. Here he asks a first tentative question, "Whether the method of anatomy could corroborate speculation." This letter is therefore transitional, occupying the period of the scientific adolescence of Vesalius, bridging the interval between the frankly Galenical anatomy of his earlier recension of Guinter's *Institutiones Anatomicae* (1538) and the *Fabrica* (1543), the first positive achievement of modern science.

In the history of modern science the study of structure necessarily preceded that of function. Vesalius was without the illumination that came with Harvey's disclosure of the circulation in 1628. His *Letter* of 1539 is based on the error, derived from Galen, that the venous system is independent of the arterial and receives no contribution from it. This view was the basis of a practice of venesection which, though developed by him on a more correct anatomy than that of his predecessors, is physiologically as ill-founded as was theirs. Nevertheless, Professors Saunders and O'Malley have been able to elucidate many incidental references in the course of this *Letter* that concern the activities and personal relations of Vesalius. These throw light on the central problem of his mental evolution. Our knowledge of the life and thought of Vesalius, and with it our conception of the growth of the "scientific idea," have thus been significantly forwarded by this important and ably drafted little monograph.

CHARLES SINGER.

**Andreas Vesalius Bruxellensis, The Bloodletting Letter of 1539. An annotated Translation and Study of the Evolution of Vesalius's Scientific Development.* By John B. de C. M. Saunders, F.R.C.S., and Charles Donald O'Malley. Limited Edition. (Pp. 94. 21s.) London: Wm. Heinemann Medical Books.

Reports of Societies

HEALTH CENTRES

A meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine, held on March 7, was devoted to a discussion on "Health Centres." Sir ALLEN DALEY presided. A model and plans of the projected L.C.C. Woodberry Down Health Centre were exhibited. This was the centre described in our issue of Jan. 29 (p. 191).

Architectural Considerations

Mr. W. T. DURNFORD, F.R.I.B.A., of the Architects' Department, L.C.C., said that the general plan in London was eventually to have a health centre to every two neighbourhood units, a unit comprising a population of from 6,000 to 10,000. When the scheme was completed no resident in the county of London would be living further than one mile from a health centre. One difficult architectural consideration was the number of floors which should be planned. Medical practitioners were anxious to be "in on the ground floor," but so were all the other services—which was impossible. Another planning question was whether the approach to the centre should be by a single entrance from a large central space or by a separate entrance for each unit in the centre. At Woodberry Down the latter method had been chosen.

It had been decided to place the doctors' and dentists' units on the main frontage of the building with access from the chief traffic road. This might have the disadvantage of traffic noises, but these could be minimized by the use of double windows, by setting back the building from the road, and by judicious tree-planting. Parking facilities for patients' cars and garage space for the cars of doctors were a necessity. The six general practitioner suites were on the ground floor and were approached by corridors from the main entrance. The temptation to make a single large waiting-room had been resisted, and there would be small individual waiting-rooms for the patients of each doctor. These rooms would each accommodate about twenty patients, the planning being on the assumption that the number of registered patients per doctor might stabilize at 2,500, and allowance was also made for a certain number of private patients. The superficial area of the consulting-room was 168 sq. ft., and opening from it would be an examination-room equipped with couch and lavatory basin. The patients would be able to leave without returning to the waiting-room.

Other features of the Woodberry Down building would include an isolation-room on the ground floor. On the first floor there would be a minor-operations room, a room for ophthalmic treatment, and a room in which the doctors could carry out any of the simpler pathological investigations without the attendance of a pathologist. There would be two dental surgeries, from which access would be obtained to *x*-ray apparatus elsewhere. A small drug store was provided for the immediate needs of the unit, but not for dispensing practitioners' prescriptions. A lecture hall of 800 sq. ft. was planned. A foot clinic would be included, with its own small waiting-room and a room for examinations. A suite would be devoted to ultra-violet light therapy, and there would be a unit for orthopaedic and remedial exercises and a child-guidance clinic. There would also be common-rooms for the staff. The cost of the Woodberry Down centre was expected to be 5s. 6d. per cu. ft. (leaving out furniture and movable equipment), or £3 10s. per sq. ft. of area.

Value of Partnership

Dr. A. TALBOT ROGERS, chairman of the Health Centre Committee of the B.M.A. and vice-chairman of the Health Centre Subcommittee of the Central Health Services Council, said that the B.M.A. Committee had been set up with the idea of trying to discover what experience had shown to be the most satisfactory form of medical practice. In the course of a survey a large number of doctors practising under different conditions had been interviewed. The best type of practice was held to be a partnership practice conducted from a communal surgery. Such a system gave the doctors opportunity for consultation with each other, it stimulated friendly competition, it enabled the more experienced practitioner to help the younger man, and at the same time it enabled the young man straight from the medical school to rejuvenate some of his elders. This combination of three or four or perhaps half a dozen doctors working together had enabled such doctors to provide an increased number of consultation hours; it also gave the patients a choice of doctor, if they wished, for different illnesses or different members of their family. The partners were also able to cover the temporary absence of any of them without the introduction of a strange doctor.

It was found that partnerships on the whole were better equipped (instruments, books, etc.). Moreover, an amicable working partnership did attract patients. If an extra partner were taken in on account of the large amount of work it was soon found that the overplus of work was absorbed and that the number of patients grew. The partnership system was not unpopular, to say the least of it, among patients. Further, it made it possible economically to use a greater amount of auxiliary and secretarial help.

During the last thirty years there had been a separation between the service of the general practitioner and the preventive services of the local health authority. It was desired to reintegrate those two sides of medical practice. The health centre would include provision for maternity and child welfare service, the school medical service, etc. It was a little problematical whether the midwives could also work from there. It was desired to make the centres as little institutional as possible. Too great a modelling of the health centres on the lines of the local authority clinic would be enough to upset the relationship. Therefore he welcomed the idea that each doctor should have his own suite and that there should not be one large common waiting-hall. He doubted whether the health centre would furnish a good opportunity for the health education of the public. As he saw it, the patients coming to these health centres to see their own doctors were unlikely to be coming regularly, and therefore there would be little opportunity for the use of such methods as a series of posters leading one to another. Moreover, they would alter the atmosphere of the whole place, making it like an exhibition hall. Lectures might be given to invited groups, but not ordinarily to the patients waiting to see their doctors.

So far as the diagnostic facilities, particularly pathological and radiological, were concerned, he thought that these should be provided not at health centres but at hospitals. If easy access to hospitals could be provided it was better that such diagnostic facilities should be available there. Again, on the question of physiotherapy, the setting up of such a unit at Woodberry Down might mean some wastage of staff. The physiotherapy department was better placed at the hospital. He hoped that the health centre might be used for the education of young practitioners and medical students.

Doctors Working Together

Dr. FRANK GRAY, secretary of the London Local Medical Committee, who was introduced as "a specialist in general practice," explained that he was speaking only for himself and not for his committee. He believed that in a new departure of this kind they must learn as they went along. They would undoubtedly learn from their mistakes, and from their successes—if they had any. The men and women who worked at the centre were more important than the bricks and mortar. It was rather a pity that in their discussion that evening they had started with the building. Was it wise to force doctors into a building prepared for them? Was it not better to build the edifice around the doctors?

The natural starting point was a number of doctors working together. What followed from that conception? To his mind it was essential that doctors should work in partnership. Supposing they did not work in partnership, what about the new patient? The health centres themselves, with their "chromium plating and platinum blondes," would attract patients. Patients would come and say, "I want to join the health centre," and when asked, "Which doctor do you want?" they would not be able to say. If the doctors were in partnership that did not matter. Then what about the surgery hours if the doctors were not in partnership? Would each of them stay on until the other fellow had gone home? How was any one doctor to express the views of his colleagues to the local health authority on the running of the centre unless they were all in partnership? Even angels might be tempted to put their own preferences before those of their colleagues in such circumstances.

As for the use of space, it was possible, said Dr. Gray, that the era of unlimited spending might not last for ever. If that was so the question of the use of space would have to be considered much more closely. At present, with great respect to the L.C.C., the idea seemed to be not only one room for each individual doctor but one room for each individual whatever function he was performing. Somebody would ask one day, "Is all this building really necessary?" It meant unlimited money, a pre-Service mentality, and vested interests, but unlimited money would not last for ever, the pre-Service mentality would die out in the course of years, and, as regards vested interests, the larger vested interests in sale and purchase had been abolished, so that it was not unreasonable to suppose that the smaller also might be faithfully dealt with. Supposing this was not a public enterprise, but just a partnership of several doctors in a large surgery, was it supposed for a moment that they would go in for all these rooms? They would share the consulting-room. They would not all want to be there at the same time. What did they do in Harley Street?

Then he thought they must not lose sight of the advantages of the doctor's private house. They might not know what to do

in this new set-up, but they did know what not to do—namely, not to imitate the hospital out-patient department. It would be very nice to have an appointments system. The room could then be smaller and cosier still, but in general practice that system would not work. As one who had worked in a general practice for some time, he knew that they got a large number of patients who always wanted their own particular doctor, but a number also did not want or need a particular doctor, they just came for the certificate. In a partnership that was easy to arrange; without a partnership it would be an appalling difficulty.

He could not resist a word on physiotherapy. Physiotherapy was the best method devised for the activation of neurosis. They did not want it. He noticed also that at Woodberry Down there was to be a nice little apartment for the night-duty doctor. What was the idea of a night-duty doctor at a health centre? Why have one? The only useful purpose would be for night consultations. If it was a case of being called out at night it would be just as well to summon the doctor by telephone from his home a mile away as from his bedroom a few hundred yards away in the same building. Patients who attended at the health centre were not usually the people who wanted attendance during the night, and, as for accidents, these were best dealt with at the hospital. He could not see any reason for the night-duty doctor. What was wanted was a really intelligent night caretaker who would be able to put a messenger in touch with the doctor direct.

General Discussion

Dr. C. O. S. B. BROOKE (Finsbury Health Centre) said that his experience in Finsbury was that the physiotherapy clinic did not stimulate neurosis and it had a great value, particularly in relation to the aged and infirm. A few years ago, in discussing health centres, the accent was on positive health, whatever that might mean, but now it appeared that such centres were for curative medicine. They ought to be called "general practitioner centres." It had been assumed that patients would be ready to go a mile to the health centre, but that was optimistic. In London people were not willing to go quite as far as one mile. There was no part of Finsbury which was as much as one mile away from the health centre, but they had difficulty in getting people to attend from the remote parts of the borough. Previously he had had experience in County Antrim, and he found less difficulty in getting people to go 20 or 30 miles to their county town than in getting Finsbury patients to go to University College Hospital.

Dr. H. C. BOYDE (West Ham) noted that there was lacking in the present discussion any sense of urgency. Nobody appeared to realize that in the Health Service the machine was creaking in many of its joints, and the resulting strain was being borne fundamentally by the men in general practice. Whatever difficulties there might be in hospital organization, the simple fact concerning the general practitioner was that he had now more difficulty than ever before in getting his patients into hospital. He believed that there could be no improvement in the quality of general practice without a health centre. In West Ham they had worked out a plan for a health centre with six doctors, two dentists, a number of nurses, a physiotherapist, and certain technicians. The problem was to fit them all together.

The "physiology" must come first and the "anatomy" afterwards. The West Ham scheme, which planned to place the health centre in an adapted building and brought in the administrative side of local health authority services, including maternity services, home nursing, a minor laboratory, and some elementary ancillary facilities such as a chiropodist, was estimated to cost £15,000. It had been fully endorsed by the general practitioners, the local executive council, the medical officer of health, and the borough architect, but the Ministry had turned it down on the flippant ground, as they thought it, that it would use 40 tons of steel. They were now submitting revised plans, according to which only six tons of steel would be needed, and it was hoped to start in three months from now.

Dr. J. A. SCOTT (L.C.C.) pointed out that it was the local authority which provided the "anatomy" and somebody else who provided the "physiology," and he rather thought that any "physiological" proposition would be refused unless there were already a "skeleton" fit for the work. It was necessary therefore to think about the building and to try to make a reasonable framework and equipment.

The PRESIDENT said that the question of a pharmacy at the health centre was one of considerable difficulty. At Woodberry Down there appeared to be a number of chemists' shops in the vicinity, and it was thought that if there was a dispensary at the health centre with people queueing up it would rather suggest the out-patient idea. On the question of the night doctor he wondered whether the doctors working at the centre would be prepared to live, as Dr. Gray had suggested, only a mile away.

Dr. GRAY, in reply, said that Woodberry Down was an excellent "pilot model." If a start had been made with a bad health centre in London it might have damned the movement in the whole country. As for the night doctor, he thought the doctor should not live more than one or two miles away from the centre, and the executive council should discourage doctors living at a greater distance.

Dr. ROGERS said they all agreed that they did need prototypes like Woodberry Down. He also pointed out the great advantage to that hardworking member of the doctor's practice—namely, the doctor's wife—in having her home uninvaded and the work of the practice transferred to a centre.

Mr. DURNFORD said there was nothing "flippant" in turning down a scheme which took 40 tons of steel. It was not realized how extraordinarily scarce were building materials and labour. Adaptations were in the long run much more costly and took more time than new buildings and were seldom satisfactory. It was better to concentrate on a smaller number of new buildings than on a large number of adaptations.

WOODBERRY DOWN HEALTH CENTRE

On Wednesday, March 16, at 11 a.m., Mr. Aneurin Bevan cut the first sod of the site of the Woodberry Down Health Centre at Stoke Newington. The new centre is to cost £187,275. It will be the first of its kind in London, and the first in the whole country to be approved by the Minister of Health. Under one roof there will be ante- and post-natal clinics, a child-welfare clinic, a school treatment centre, other local health services, and general practitioner and dental services.

Five units will be accommodated: a medical practitioners' and dental surgeons' unit, a school health unit, a child-welfare unit, an antenatal unit, and a remedial exercises and child-guidance unit.

The L.C.C. will staff the centre with receptionists, dental technicians, and others, and the London Executive Council will arrange for the attendance of general practitioners and dental surgeons. The L.C.C. will also staff the clinics and the school treatment centre. Doctors and dentists attending the centre will, with the L.C.C. divisional medical officer, form a professional committee to organize the general medical and dental services and to make recommendations to the body responsible for running the centre as a whole—the L.C.C. Divisional Health Committee. To the east of the health centre a day nursery is to be built.

The Ministry of Health announces that a working party has been appointed to investigate the timings of dental operations. The working party has been asked to ascertain the average chairside time taken by general dental practitioners in England, Wales, and Scotland (1) in the National Health Service and (2) in private practice to complete each of the types of dental treatment set out in Part I of the First Schedule to the National Health Service (General Dental Services) Fees Regulations, 1948, excluding any items for which it is impracticable to establish an average time—e.g., orthodontic treatment. The working party consists of: Mr. William Penman (chairman), a past president of the Institute of Actuaries; Mr. A. Macgregor, L.D.S.F.P.S.; Mr. S. Donald Cox, of the British Dental Association; Mr. J. Lauer, L.D.S.R.C.S., of the Public Dental Service Association; and Mr. A. H. Condry, of the Incorporated Dental Society. Dentists selected by the chairman will be invited to assist in the investigation.

Correspondence

Occupational Diseases of the Lens and Retina

SIR,—It was on Nov. 13, 1902, nearly forty-seven years ago, that Dr. William Robinson read his paper on "Bottle-finishers' Cataract" at a meeting of the Northumberland and Durham Medical Society in Newcastle-upon-Tyne. The paper, with an illustration, was published in the journal of the Society the following year. I remember the occasion so well, and was disturbed that this original communication should have received such a lukewarm reception. William Robinson was then a practitioner-surgeon in Sunderland on the staff of the Eye Infirmary of that town, as well as the General Hospital, and was remarkable in that he had obtained his F.R.C.S.(Eng.) while in general practice in what was then a remote country township in Durham. Shortly afterwards he migrated to Sunderland.—I am, etc.,

Taplow, Bucks. G. GREY TURNER.

Pain in Childbirth

SIR,—The publication of the report of the Medical Women's Federation on pain in childbirth (*Journal*, Feb. 26, p. 333) comes at an opportune time. The important point that I want to emphasize is the large number of such cases where chloroform was used, when 194 out of the 222 medical mothers who received it "found it perfect." Chloroform has been in general use in maternity work for 100 years. I can vouch personally for its use for 50 years—(1) when in charge of a large hospital maternity district; (2) in a large single-handed maternity general practice; (3) when in charge for years of the teaching of anaesthesia in the same hospital; (4) when the maternity ward was opened; (5) as a specialist giving many such anaesthetics in ordinary and abnormal cases for many obstetricians in their private work in and around London; and (6) finally in the country for a large scattered rural practice.

Personally, I have not met any difficulties. I was co-opted on the Committee of the Royal College of Obstetricians and Gynaecologists after I had given the College a registered fool-proof Junker which, in the hands of unqualified people, was considered by the Committee as "reasonably safe." This safety Junker was registered, as the measurements had to be carefully complied with, and Mr. Charles King did this at my request before presentation to the R.C.O.G. for trial.

Recently Dr. John Gillies, of Edinburgh, wrote a paper for *Anaesthesia* giving most interesting figures of the use of $CHCl_3$ in Scotland. Experimentally I saw in the U.S.A., in 1923, auricular and ventricular fibrillation produced in tracheotomized dogs with their hearts exposed, and was much impressed with the large amount of $CHCl_3$ needed to produce it. I was not impressed with McKesson's N_2O anaesthesia, even when given by himself. Why, then, was $CHCl_3$ condemned by the R.C.O.G. for use in a fool-proof machine? Simply on evidence of delayed $CHCl_3$ poisoning in three inexcusable cases, and in one fatal case, when 120 minims (7 ml.) of $CHCl_3$ was given in a single dose on a mask! (6 glass capsules=2 drachms.) Analgesia is not fully understood, far too large doses are used, and it is possible to control the dose and limit the time of inhalation mechanically.

At the Annual Meeting of the B.M.A. at Cambridge last July, when I was President of the Section of Anaesthetics, we held a most successful combined meeting with the gynaecologists on analgesia. I was able to keep the discussion an open one. I was pleased to hear many people admitting the use of $CHCl_3$, which is more than they did at Oxford in 1936, although I knew they were constantly using it. Then it was only when my old friend Beckwith Whitehouse (who was in the chair) called upon me towards the end of the meeting, and by previous arrangement, that $CHCl_3$ was even mentioned.

Trilene is still *sub judice*; but the preliminary communications read at Cambridge by the two research scholars of the Association of Anaesthetists working at Guy's gave promise of useful information to come.

This is a plea for the better understanding of $CHCl_3$ analgesia and its teaching to the untrained, with proper safeguards.—I am, etc.,

Petworth, Sussex. Z. MENNELL.

SIR,—As a midwife, may I comment on the report of the Medical Women's Federation as printed in the *Journal* of Feb. 26 (p. 333)?

(1) The very high proportion of specialist obstetricians booked for deliveries (i.e., 318 out of 425) is obviously not representative of the country as a whole. This would not matter if the result of booking this type of accoucheur had not produced an abnormal number of forceps deliveries for apparently unknown causes. (It is tempting to suggest possible reasons.)

(2) These instrumental deliveries surely affect the number and types of anaesthetics administered. The handling of an apparently normal case resulting in a forceps delivery could equally affect the mother's desire for "more anaesthetic."

(3) I doubt if such detailed accurate information can be obtained ten years after the event.

(4) 69% of perineal tears among the primiparae is dismissed as "the situation . . . is on the whole satisfactory." I can imagine no midwife considering such a total so complacently.

My conclusion is that a far more useful result, combining detailed knowledge of drugs used and the conduct of the labour with a more widespread and normal engagement of accoucheurs, could be obtained if a similar questionary could be sent to all married midwives who have had children within the last five years.—I am, etc.,

London, N.6. N. C. GILBERT.

SIR,—As you say in your leading article (Feb. 26, p. 356), some disquieting facts emerge from the report of the Medical Women's Federation on the relief of pain in childbirth, published in the same issue at p. 333. These medical women presumably selected their medical attendants for their confinements with especial discrimination, and over two-thirds of them were attended by obstetric specialists. And yet the report shows that they had a forceps rate as high as 27% for first births, perineal repair was required in no less than 43% of normal deliveries, and there is still an astonishing addiction to chloroform as an anaesthetic. Are these the same obstetric specialists who are trying to persuade us that the general practitioner is not fitted to undertake normal midwifery?—I am, etc.,

Wivenhoe, Essex. WALTER RADCLIFFE.

Painless Childbirth—A Suggestion

SIR,—Nearly thirty years ago, owing to a succession of fatalities under anaesthesia, reported to a Board of which I was a member, I commenced a tentative investigation in search of a safe anaesthetic. Various unsaturated hydrocarbons, chloro-derivatives, and ethers were tested on myself, those not commercially obtainable being prepared by me in the department. The investigation had unfortunately to be abandoned, and opportunity to continue it was not found before my retiral. Of the substances tried, propylene pleased me most: 15% in 35% oxygen produced loss of consciousness; 12% did not; 34% caused intoxication in one minute and loss of consciousness in three minutes. No ill-effects were experienced. The lower homologue, ethylene, required 60% concentration with 40% oxygen to produce unconsciousness; only 35% of the less saturated acetylene was necessary; both were more effective than 80% nitrous oxide with 20% oxygen. It is necessary to emphasize that the propylene must be pure. Inhalation of the next higher homologue (a mixture of two butylenes), prepared without sufficient care, produced serious effects. The unsaturated hydrocarbon series stopped at the butylene stage, for one of the many isomers of amylene, the next homologous series, had been used (under the name pental) for some time previously as an inhalation anaesthetic, and apparently without decided untoward actions. Theoretically, it should be more toxic than propylene. Work on the polymethylenes was contemplated, but their preparation in a pure form was beyond the resources of the department. One of them, cyclopropane, has since been introduced into practice. Propylene has similar properties to it, but it will, I think,

be found to be safer and more pliable in administration. It can be given with an excess of oxygen, and a luxus supply of oxygen is a desideratum in anaesthesia. Thirteen minutes after commencing the inhalation of 12% propylene with 32% oxygen I am reported as having complained of a slight feeling of oxygen want.

The most serious objection to a mixture of propylene and oxygen for amateur administration is its inflammability. The addition of a small amount of a chloro-derivative such as chloroform, or, perhaps better, methylene dichloride, which, notwithstanding statements to the contrary, is less toxic when pure than is chloroform, might counteract this fault. Such a mixture could easily be put up in small bombs of definite capacity, similar to those used for CO_2, which could be released into a large rubber bag containing a prescribed volume of oxygen mixture to give the concentration of anaesthetic which may have been found to be safe and effective for the conditions required. A mouth-piece is much preferable to a face-piece, and the uncomfortable nasal clips used in my experiments might be replaced by cotton-wool plugs in the nares. The required apparatus should be easily portable, especially if small oxygen bombs could be supplied. To anyone sufficiently interested to investigate these possibilities I offer myself as an experimental animal.—I am, etc.,

Burley-in-Wharfedale, Yorks. C. R. MARSHALL.

Primitive Midwifery

SIR,—I think this may prove of interest. It is an extract from a letter written to me a few years ago by Dr. Marian Smythe, then in charge of the Elizabeth Newman Hospital in Kashmir, in answer to questions I had written to her.

"I had an interesting experience last year. I was in a village and was called out to a house where a woman was in labour, a primipara, fully dilated, with rather funnel-shaped pelvis, membranes ruptured. Foetal heart very irregular and rapid and very hard pains. As there was no sign of advancing—head wedged firmly in the pelvis with a narrow outlet—I said, 'Only forceps will get that out,' and sent to our camp for them and chloroform, meanwhile *samjaoing* (lecturing) the relations. They were very *jungly* and implored me

to wait and brought in a village *dai* (hereditary midwife). I have tried to draw a rough picture of what happened. The kneeling one is putting her finger down the patient's throat to produce vomiting. The squatting one is, I suppose, pulling the outlet open, though she wouldn't tell me or let me look, and was very shocked by my questions and said it was '*Sharm hungkat*' (shame). The seated lady is clasping the abdomen with all her strength. Between them they produced the child in ten minutes, stillborn, before my forceps arrived.

"I suppose they have been doing this since the days of Abraham (viz., Genesis xxx. 3; Exodus i. 16). This is the only time I have seen this, and my questions here elicit nothing of the sort from city *dais*, so I gather it is only in villages they do it now. This was in one of the Sindh valley villages up the mountain near Wozil Bridge, pretty remote from civilization."

The indigenous midwives are such by caste and have picked up the knowledge they possess from their mothers. They are very reticent about their practices, but do craniotomies with a sharpened stick and extract with a piece of string, and they rely largely on change of posture during labour and the use of salt pushed into the vagina to heal the wounds they have made. To clean their hands before making an examination I have seen them rub them on the floor; in most cases this is of earth beaten down hard.—I am, etc.,

London, N.W.11. KATHLEEN VAUGHAN.

Oral Reactions to Penicillin

SIR,—In reply to the letter by Drs. P. Ellinger and F. Mackenzie Shattock (March 5, p. 411), I regret attributing to them the statement made in my paper (Jan. 29, p. 171) that the oral reaction was largely one of nicotinamide deficiency. I was perhaps misled by the suggestion in their summary that symptoms disappeared after the discontinuance of the drugs and the administration of nicotinic acid.

In the cases I examined no examination of the elimination of nicotinamide derivatives was made. Those patients receiving penicillin tablets containing 6 mg. of nicotinamide received a total of about 60–90 mg. of nicotinamide a day. On the other hand, no cases under treatment with penicillin exhibited clinical manifestations of nicotinamide deficiency, and discoloured tongue following prolonged (4–5 days) treatment with local oral penicillin is common. The explanation for these discoloured tongues suggested by Dr. N. Gohar (Feb. 26, p. 367)—pigmentation due to saprophytic fungi—appears a likely one, and worth further investigation.—I am, etc.,

London, W.C.1. W. G. CROSS.

Fish Poisoning

SIR,—The annotation in the *Journal* of Feb. 19 (p. 317) concerning poisoning after eating fish from localities in which surplus war material had been dumped, recalls to mind a happening in Egypt during the late war. Food poisoning after eating fish from Lake Timsah, on the Suez Canal, occurred in the Ismailia area. I do not know the symptoms in humans but it was alleged that the fish concerned caused paralysis when fed to cats. It was thought at the time that there was some connexion between the outbreak and the numerous mines and bombs which had been dropped in the canal and lake.—I am, etc.,

Birmingham, 3. B. R. SANDIFORD.

Hunterian Oration

SIR,—It is a matter of regret that Mr. H. S. Souttar in his recent lecture (*Journal*, March 5, p. 379) saw fit to make certain statements liable to give offence to the countrymen of John Hunter. It is historically inaccurate to state that the Highland army pillaged Glasgow and invaded England in a destroying horde. No army ever entered hostile territory and did less damage. He has evidently become confused with "Butcher Cumberland" and the English army, who established "an all-time-high" for murder, arson, pillage, and destruction. His comparison, too, of Highland barbarity and Afghan civilization is likewise unfortunate. Actually, in the 17th period the Highlands were enjoying under Macdonald, Mackay and MacIntyre a literary efflorescence unparalleled in Europe. A Hunterian lecturer should be meticulously accurate.—I am, etc.,

Oban. ATHOLL ROBERTSON.

Tuberculous Meningitis

SIR,—Drs. J. Rubie and A. F. Mohun show again in their excellent article on tuberculous meningitis (Feb. 26, p. 33) how much the success of streptomycin treatment depends on early diagnosis, which, of course, is most difficult in the young child. For him the diagnosis is still very gloomy. Could not the general practitioner and the clinic doctor help by making much wider use of a reliable tuberculin skin test? Professor W. S. Craig (Aug. 21, 1948, p. 374) states that the prodromal stage of (usually) two to three weeks may extend to two months, and that it is "characterized by symptoms which individually appear to have no serious import but collectively reflect considerable and to some extent increasing

physical and emotional debility." When the doctor is consulted at that point and finds no definite physical signs he may well be tempted to prescribe in the first resort a simple tonic or vitamin preparation.

At this stage surely the routine employment of a test such as the Mantoux or the multiple pressure test is very desirable. If it is negative, tuberculous meningitis is a most unlikely diagnosis; if it is positive, further investigations are definitely indicated; and in either case the doctor will have obtained for his records information which will be useful to refer to on later occasions. It is admitted, of course, that the test will very commonly give a negative result in such cases, but is not the chance of very occasionally spotting an early case of tuberculous meningitis, or of other active tuberculous infection, well worth the trouble which this procedure involves?—I am, etc.,

Oxford. W. G. HARDING.

SIR,—Tuberculous meningitis, once a hopeless condition, is now accessible to treatment, as has again been shown by Drs. J. Rubie and A. F. Mohun (Feb. 26, p. 338). However encouraging this is, I would like to point out that most of the articles dealing with the treatment of tuberculous meningitis fail to represent clearly some facts which have an important bearing upon the results.

It is generally agreed that the results are less favourable the younger the children are, especially in the first three years of life. Out of 54 cases (Rubie and Mohun) 18 survived (33%). Table VIII shows that there was only one survivor out of the 7 cases (32%) in the age group under 3 years. 94% of all survivors were older than 3 years.

As a matter of fact, tuberculous meningitis occurs chiefly in early childhood. Out of 163 cases of our observation 94 (57.3%) were under 3 years and 121 (73.7%) were under 5 years. Furthermore, the younger the child is the less characteristic are the symptoms and the more difficult the early diagnosis. Among 76 thoroughly analysed cases there were only 8 (10.5%) which showed the typical clinical course as described in textbooks. The skull is not yet entirely solidified in early childhood, and the intracranial pressure, which is so much responsible for the clinical features, does not rise so much and so early as in older individuals.

The age incidence, therefore, is all-important when assessing the practical results of treatment. This statement does in no way diminish the great achievement, which is already so obvious, in the combat against tuberculous meningitis. It is rather meant to put more accent upon the relation between age and the disease when treated with modern methods, and to show that the less favourably responding young children represent the vast majority of cases.—I am, etc.,

Watford. S. ENGEL.

Fibrositis

SIR,—Dr. R. O. Adamson (Nov. 27, 1948, p. 956) has stated that in Stockman's book entitled *Rheumatism and Arthritis*, Edinburgh, 1920, there is "ample and clear proof of the reality of fibrositis." I have not read Stockman's book since I was in London eleven years ago, and I am unable to obtain it in this country. I am therefore not in a position to comment on Stockman's work, but I would refer Dr. Adamson to the *American Journal of Pathology* (1946, **22**, 121). In discussing the pathology of fibrositis Steiner, Freund, Liechtentritt, and Braun state:

"Hench, declaring the fibrositic nodules as the 'signposts of the disease,' emphasized the disappointing results following biopsy. He found little or no histological abnormality. Other observers (Collins, Bocumb, Buckley) agreed that the structural changes in fibrositic lesions are meagre. The pathological findings in 'fibrositis' as first described by Stockman—namely, numerous fibroblasts, serous or fibrofibrinous exudate, and thickening of walls of the small blood vessels and nerve sheaths—were considered by Collins as unimportant. Collins emphasized the absence of cellular infiltration as the only important fact in Stockman's investigation."

It would therefore seem that Stockman did not prove the existence of fibrositis, and that later investigations show the existence of this condition to be even more doubtful than was formerly believed.—I am, etc.,

Mt. Hawthorn, Western Australia. JAMES H. YOUNG.

Penicillin in Influenza

SIR,—The present outbreak of influenza, though mild, is completely incapacitating. It is of interest, therefore, that the attack can be cut short by massive doses of penicillin. In a series of twelve cases given a dosage of 750,000 to 1,000,000 units four-hourly, the temperature fell to normal in less than twenty-four hours. A parallel control series showed no such rapid remittance of fever. It is generally considered that the virus is insensitive to penicillin. But with this dosage, and the probable raising of the blood-penicillin level to 7 or 10 units per ml., it is possible that the strain infecting this country at the moment is susceptible to such chemotherapy.

In any case it would appear to be worth extensive trial.—I am, etc.,

London, W.1. NEVIL LEYTON.

Penicillin and the Infected Hand

SIR,—May I draw the attention of the author of your leading article (Jan. 29, p. 187) to a contribution of mine (*Edinb. med. J.*, 1945, **52**, 469) which was one of the first after the original paper by Lady Florey and Dr. Williams? Mr. Barclay, in his paper in the same issue of the *B.M.J.* (Jan. 29, p. 175), refers to it, and through his courtesy I was previously aware of the interesting investigation which he was conducting.

In different types of hand infection I contrasted the results of treatment by control methods and by penicillin cream and found no difference whatever. In comparable types these figures were the same as the figures for local penicillin in the series of Lady Florey and Dr. Williams, but much better than their control figures.

In acute suppurative tenosynovitis these writers recorded an important advance by showing that local penicillin treatment could permit of a movable finger, but the limitation of the method was that full movement at the interphalangeal joints was not recovered when pus was present in the tendon sheath. In my own series of cases of tenosynovitis I too obtained some good results with penicillin cream. As penicillin became less scarce, however, the continuous intramuscular drip was used without local penicillin with such success that out of twenty-five cases full movement was restored in twelve and a very good range in seven. Included in this series were six cases involving the radial and/or ulnar bursae, without a single bad result.

In view of these results it is difficult to understand why, in your leading article, the virtue of local penicillin is so much exaggerated while the value of systemic penicillin is so grudgingly conceded. Systemic penicillin allows the minimum disturbance of the infected part, is the ideal method of treating the more extensive infections, and controls spread in a way not otherwise possible.

In attempting to assess the value of a new remedy such as penicillin it is important to appreciate what were the results prior to it, and it is necessary to assume adequate surgical supervision in all instances, since bad surgery will vitiate any proper comparison. Before the advent of penicillin what types of hand infection did badly no matter how great the degree of surgical skill? Acute suppurative tenosynovitis gave almost uniformly bad results, the outcome being the loss of interphalangeal movement or else amputation of the finger; involvement of the radial or ulnar bursa was a serious condition, carrying the risk of severe loss of function. Acute suppurative arthritis in the great majority of cases gave rise to a stiff joint or else necessitated amputation of the finger. A severe confluent type of lymphangitis due to *Str. haemolyticus*, besides being dangerous to life or causing a long illness, was capable of producing most serious crippling; sulphonamides did not by any means control all infections of this nature. In these three severe types of infection systemic penicillin has proved of immense value and has completely changed the prognosis. I am sorry, however, that Mr. Barclay's series did not include more cases of this severe nature.

As a complete contrast the other common types of hand infection could not be considered deforming or crippling in the absence of severe complications. Perfect recovery was attainable in a high proportion of cases by good surgery alone, and bad results were usually quite needless. Penicillin cannot be expected to produce any great improvement in these, and Mr. Barclay's results are thus understandable. Systemic penicillin, however, has shown its value by some improvement in the time of healing, a satisfactory control of spread of infection, and the avoidance of complications.

Before the use of systemic penicillin there was a rather rare type of spreading or gangrenous infection, usually associated with constitutional factors such as old age, heart disease, and diabetes. In my paper I referred to the fact that these cases invariably did badly with any form of local treatment, but, as Mr. Barclay shows, systemic penicillin, by controlling the original infection quickly, may now be able to prevent this condition.

In any type of infection necrosis is the principal cause of retarded healing and disability, and I noted how it can be traced to such errors as lack of early attention to wounds, too early incision of an area of cellulitis or lymphangitis, prolonged application of hot fomentations, too much reliance on sulphonamides when incisions were called for, and the making of incisions without adequate surgical facilities. These errors are preventable, but, until they can be overcome by adequate methods of education and organization, the results of hand infections are unlikely to show any further spectacular improvement. The great value of systemic penicillin has been established, and further advances in its use will be concerned with new preparations and easier methods of administration.—I am, etc.,

Edinburgh. J. F. CURR.

Osteitis Fibrosa Disseminata

SIR,—I have read with much interest the paper by Mr. D. J. MacRae carrying the above title (March 5, p. 389). As he quotes freely from papers published by me,[1 2] in which I drew attention to the association of severe neonatal jaundice and the development of osteitis fibrosa cystica, I should like to comment on that point, and, in the light of present knowledge, to correct the idea that the Rh factor was implicated.

Among the published cases of osteitis fibrosa cystica, in addition to my two cases, one recorded by McCune and Bruch[3] and two by Summerfeldt and Brown[4] had a similar history of severe and prolonged jaundice in the newborn period. At that time the role of iso-immunization in the production of icterus gravis neonatorum, and the importance of the study of the Rh factor in the differentiation of the different types of that condition, were unknown. Recently, in my two cases, the Rh factor has been examined, and in each case the mother has been found to be Rh-positive. They cannot be classed, therefore, as cases of "haemolytic disease of the newborn," although the fact that they suffered from "icterus gravis"—severe jaundice—of unknown aetiology remains.

Mr. MacRae suggests that the bone disorder may be due to disturbance of parathyroid function, and relates that to the neonatal jaundice. It has been established that kernicterus may result from neonatal jaundice of varying aetiology, and the possibility of a resulting lesion of the central nervous system being responsible for the endocrine disturbance leading to the precocious puberty which occurs in some of the patients suffering from osteitis fibrosa cystica was discussed in my paper. All my evidence, however—absence of hypercalcaemia and hypercalcuria, a positive calcium balance, and a negative rabbit test for the presence of parathormone in the blood—was against implication of the parathyroids in the production of the bone changes.—I am, etc.,

Birmingham. FRANCES BRAID.

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1 Braid, F. (1932). *Arch. Dis. Childh.*, **7**, 313.
2 —— (1939). Ibid., **14**, 181.
3 McCune, D. J., and Bruch, H. (1937). *Amer. J. Dis. Child.*, **54**, 806.
4 Summerfeldt, P., and Brown, A. (1939). Ibid., **57**, 90.

Ocular Filariasis

SIR,—The following case is of interest because of its unusual occurrence in this country. On Aug. 20, 1947, a man aged 30 attended Oxford Eye Hospital with a worm moving under the lower bulbar conjunctiva of his right eye. He had been resident in West Africa for nine months prior to returning to U.K. in February, 1946, and within a month of his return he began to have Calabar swellings that caused him very little discomfort. The last of these had been under the skin of the left lower lid, then the nose, then the right side of the face, this last occurring the day before the subconjunctival signs.

On examination, a worm was seen to be moving slowly and snakelike under the lower bulbar conjunctiva of his right eye. During an hour's observation it completely disappeared twice. The patient was only conscious of very slight local irritation. Under 4% cocaine drops, which seemed to have no effect on it during the minute of application, the worm was removed intact through a small incision in the conjunctiva by easing it out over the closed blades of blunt-pointed conjunctival scissors and lifting it away with non-toothed forceps. It made no effort to go deeper during this procedure, but became very active after removal, in air and in saline. The eosinophilia was 40% of a total W.B.C. of 11,000. No microfilariae were found in the peripheral blood about that time. About seven weeks later another subconjunctival worm appeared, spending most of the day in view. The patient was then in another part of the country, and the worm was not removed. He has subsequently had a course of stibamine glucoside. Calabar swellings are continuing, but are becoming less frequent (one every three or four weeks instead of one or two every week).

The worm was identified by Professor J. J. C. Buckley as an immature male Loa loa.

The maximum time that could have elapsed between the first possible infestation and the appearance of Calabar swelling was ten months. Duke-Elder[1] cites one year as the shortest period recorded. According to Connal[2] the shortest period recorded in Europeans is three months, and four, seven, and nine months were recorded by him.

I should like to make acknowledgment to Professor J. J. C. Buckley, Professor of Helminthology, London School of Hygiene and Tropical Medicine, for his identification of the specimen, and to Mr. Victor Purvis, Oxford Eye Hospital, surgeon in charge of the case.

—I am, etc.,

St. Andrews. W. G. BRIDGES.

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2 Connal, A., *Nigeria, Annual Medical and Sanitary Report for the Year* 192
Appendix I, pp. 1–29.

Treatment of Varicose Veins

SIR,—Mr. C. H. Wickham Lawes's temperate and valuable letter (March 5, p. 412) recording his phlebographic studies discloses once more the surgeon's uneasiness of mind about this business of sclerosant injections. And well that it is so—for varicose veins, left alone or with no other treatment than bandage or stocking, have carried no mortality; whereas injection alone, or as ally to ligation, has—and, I assert, will. And who dares counter with the sop that varicose veins may become so harsh an affliction of man's estate on earth as to warrant the risk of death in seeking its relief?

I hope you will permit a personal note. I was at one time exponent and advocate of the sclerosant injection treatment, all the more readily following Sicard, for I had already observed the "sclerosing," thrombosing effect of my injection of quinine into the lower-leg varicose vein of a male patient down with malignant malaria. I even accepted the preposterous claim that the "venitis" provoked by the chemical sclerosant differed from other phlebitis in that the thrombus resulting from this venitis was safely fixed to the vein and the other kind was not. Further, that the clinical proof of success was manifest in a firm, hard thrombus following injection, promising fibrosis of the vein—the fibrous cord, once a vein, being eventually absorbed.

Far too many, and I for one, uncritically saw here a rational, simple, and safe treatment and an instant escape from barbarous guess, slash, and stitch operations for varicose veins, with the seldom successful and always unsightly results. I (not alone) found by biopsies after injection that the thrombus was invaded by mononuclear cells, deriving apparently from the vein endothelium and fixing it to the endothelium, and I (not alone) thought that these mononuclear cells, dubbed fibroblasts, were converting the vein into the desired solid fibrous cord. Later on, after the disappointing and almost constant discovery that when examined six months and more after injection by far the majority of injected, firmly thrombosed veins had recanalized, biopsy studies were again undertaken, on occasion served, over a period of years.

These studies revealed that the invading mononuclear cells from the endothelium were phagocytes in effect, digesting and removing clot. The process was a slow one: in one case I found the thrombus riddled with mononuclear cells and firmly adherent to a sector of the vein's lumen nine months after injection, and in many cases recanalization was proceeding six months after injection. Clear no follow-up was of value less than nine months after injection; furthermore, the clinical course and the findings of biopsy gave the same results in cases of spontaneous (non-injected) thrombophlebitis of varicose veins. The conclusion was inescapable: that a firm hard thrombosis promised eventual recanalization, not obliteration. On the other hand, I observed (but seldom), following injection of smaller varicose veins, a severe phlebitis, periphlebitis, and cellulitis—acute pain ending rather suddenly after a day or less—in this vein unlike the usual injected vein. The affected vein was doughy on palpation, and after twenty-four hours not tender to digital pressure. Biopsy discovered intense inflammatory reaction in the adventitia

enclosing small areas of extravasated blood: scanty, small round cell infiltration of the vein wall and little or no endothelial cell invasion of clot, which lay unattached in the lumen of a vein killed by destruction of its nutrient vessels—a viper-venom effect. I could scarce conclude but that "successful" injection must destroy nutrient vessels, necrose veins, produce an unanchored clot and clinically a soft, rather painless thrombophlebitis—a success fraught with danger to the patient.

Fatal accident after injection has been rare, because with injection alone necrosis of the vein occurs only in the smaller superficial veins, and that rarely. It is not disputed that injection sometimes has a chain effect—the consequent thrombophlebitis spreading with unexpected speed and violence—and even restarting with new severity after apparent cessation: that ligation and its consequent venous stasis may magnify very greatly the inflaming, thrombosing effect of injection—nor disputable that, should it occur, a deep thrombosed vein of which the necrosed wall cannot send anchoring cells into its contained clot would constitute a lively danger to its carrier. We can all agree with Mr. Wickham Lawes that "we knew beforehand that the blood goes from the superficial to the deep veins, and the position of the main communicating veins has been known for a long time. . . . Massive doses of strong sclerosants should be abandoned." With great respect, I suggest to him that should he, as ally to his phlebographic studies, take advantage (as I have done) of the frequent occurrence of varicose veins in both legs of the same patient to perform ligations and injections (retrograde or otherwise) in one leg and ligations only in the other leg (what better control could there be ?), he will—I am confident of it—find that his injections of "minimal amounts of minimal strength" have had no effect other than to give extra pain and a longer convalescence. Success will be found to depend only on the number and sites of his "ligations."

Sclerosant injection is a dangerous ally, or a useless one. It keeps a place in treatment only because of too short a time of follow-up, lack of controls, and incomplete knowledge of what it may do. A varicose vein, the whole of it, can be extirpated by resection, or avulsion of varying lengths, through incisions one-quarter to one-third of an inch in length (0.6–0.8 cm.) at selected and previously indelibly marked sites along its course. These incisions, if made parallel with the elastic fibres in the skin, gape very little and require no suture. After a thousand varicose-vein legs thus treated I can give the assurance that this operation carries no risk to the patient, who can get up and about immediately on recovery from the anaesthetic; it can often be carried out under local analgesia. There is no pain, cosmetic results are excellent, and if the whole vein is extirpated (sometimes difficult to ensure this) there is, of course, no recurrence.—I am, etc.,

London, W.1. H. M. HANSCHELL.

Carcinoma of Cervix

SIR,—I have read with interest Mr. W. Sampson Handley's reply (Jan. 22, p. 156) to my letter, but I am afraid his correspondent has misled him into certain inaccuracies which can easily be corrected. First, Kikuyu circumcision is complete, not partial, as Mr. Sampson Handley states. By this I mean that the whole of the glans penis, including the corona and the sulcus round it, is fully exposed and is fully visible without retracting any tissue. There is no spur of preputial tissue on each side of the fraenum. The fraenum is removed when the operation is performed. The spur of tissue is at the end of the shaft of the penis on the posterior aspect. This spur can give no harbour for the "mixed bacterial flora" which, according to Mr. Sampson Handley (Nov. 22, 1947, p. 841), flourish beneath the prepuce and may cause carcinoma of the cervix in females. I have myself examined and treated several thousand Kikuyu males with venereal disease, so I am in a position to know about this matter.

If carcinoma of the cervix is due to the mixed bacterial flora, as Mr. Sampson Handley suggests, surely it would make no difference if the male was circumcised at puberty (as in the Kikuyu or Fijian) or in infancy (as in Jews)? In neither case would mixed bacterial flora be able to flourish beneath the prepuce, as they do in the uncircumcised. Mr. Sampson Handley speaks of the complex mixture of circumcised and uncircumcised tribes in East Africa, and very boldly states this is not an area where unequivocal evidence on this matter can be obtained. This may be true of the towns, but it is quite untrue of this district, which is in the centre of the Kikuyu Reserve and far from any town. It is from this district that all my cases of carcinoma of the cervix come. Except for a handful of Indian traders and European officials and missionaries, no race other than the Kikuyu is allowed to live in the Kikuyu Reserve; nor do they—the Kikuyu see to that. I have spent a good many years in this district and I have never known a Kikuyu woman from this district marry a man who was not a Kikuyu. Some of my cases of carcinoma of the cervix have spent all their lives in places where the only adult uncircumcised males for 25 miles (40 km.) in any direction are European missionaries—men whose morals are above question.

In conclusion, the difference in the incidence of carcinoma of the cervix in different races must, I think, be put down to some racial factor which we do not as yet fully understand, not to the circumcision rate in the males of the race.—I am, etc.,

Fort Hill, Kenya. E. MALCOLM CLARK.

Spontaneous Amputation of Cervix

SIR,—The interesting case of spontaneous amputation of the cervix which Dr. W. Arnott reported in his letter (Jan. 22, p. 157) induces me to recall an identical case described by me and Dr. Zielinski in 1946.[1] During a rather prolonged labour in a primigravida aged 36, a plum-coloured swollen cervix, attached only by a narrow strip of tissue to the vaginal wall, was delivered before the foetal head. The detached cervix was of a saucer shape 4½ in. (11.4 cm.) in diameter and ½ in. (1.3 cm.) in its thickest spot. The external edges, corresponding to the line where the detachment occurred, were as thin as paper. The position of the os, 1 in. (2.5 cm.) in diameter, was eccentric. The rest of the second and third stages of labour and the puerperium were uneventful. Further observation of the patient was not possible owing to her departure from this country.

At the time when this case was described there were 17 cases of spontaneous detachment reported in the literature and also 21 cases of detachment in which some obstetrical operations were performed. De Costa[2] gives the following statistics which throw some light on the causation—namely: in 100% there was head presentation, in 100% premature rupture of the membranes occurred, in 100% the labours were prolonged, 88% occurred in primiparae, in 58% the age was over 36. The fact that in the majority of cases with interference the Champetier de Ribes bag was used indicates that the cervix did not dilate. It may be concluded that the expansion and thinning of the lower uterine segment above the cervix, undilated for some organic reason, leads to the detachment of the cervix.—I am, etc.,

London, W.3. C. UHMA.

REFERENCES

1 *J. Polish Army med. Corps*, 1946, **37**, 67.
2 De Costa, E. J., *Amer. J. Obstet. Gynec.*, 1933, **25**, 557.

Transmission of T. Duttoni

SIR,—I was very interested to read Dr. R. B. Heisch's paper (Jan. 1, p. 17) on "The Human Louse in Transmission of *T. duttoni* in Nature." When I was stationed at Mazabuka, Northern Rhodesia, in 1938 seven cases of relapsing fever occurred in the local prison; of these, three were among detained persons who lived in a building infested with *O. moubata*. The remaining four were convicted prisoners who were confined in the gaol, a building made of burnt brick with inside walls lime-washed and painted with tar on the lower portion; the floor was cement and the roof corrugated iron. Repeated search failed to reveal any ticks, but the prisoners' blankets were found to be infested with lice. I have no record of how long the prisoners had been in gaol before becoming ill, but I remember it was clear at the time that the relapsing fever in each case must have been contracted while a prisoner and not while detained. As far as I can remember, the blankets and the clothing of all occupants of the gaol were disinfected and no further cases of relapsing fever occurred.

In my 1938 Annual Report for Mazabuka I commented: "... the possibility has to be borne in mind that this disease among the prisoners is louse-borne." The Director of Medical Services, Northern Rhodesia, in his Annual Report[1] for 1938 for the Territory, mentioned the Mazabuka findings and said, referring to relapsing fever: "The first suggestion, so far as I am aware, that this disease in Northern Rhodesia is ever

other than tick-borne, occurs in the 1938 report by the Medical Officer, Mazabuka."

In view of Dr. Heisch's report on the finding of *T. duttoni* in lice from Africans ill with relapsing fever I thought it would be of interest to place on record my experience, as it would appear that transmission by lice of Central African tick-borne relapsing fever is not only possible but does in fact occur in nature.—I am, etc.,

Broken Hill, Northern Rhodesia. E. A. BEET.

REFERENCE

1 *Northern Rhodesia* (1939) *Medical Report on Health and Sanitary Conditions for the Year 1938*, p. 6. Government Printer, Lusaka.

Ill Children Remember

SIR,—Ann is now convalescent, an intelligent and charming little person of 11 years. But when, soon after admission to hospital with subacute rheumatism, she developed a fulminant attack of chorea we had little time or inclination to notice how pretty she was, for we wondered if ever we were going to calm her restless, never-ending involuntary movements. They were distressing to watch, the more so because overnight she had lost her speech completely. From time to time her jerky movements were punctuated by a weird and piercing scream—surely, we thought, something purely reflex and unconscious.

Not for twenty-nine weary and worrying days did she recover sufficiently to regain her speech. At first she could utter only short, simple phrases, but four days later she was speaking normally again. We had thought that she was too far gone at the height of the illness to be conscious of what was going on around her, but we were wrong. During the whole twenty-nine days when she could not speak she remembers and can recount vividly a host of trivial incidents. One day her daddy and her aunt came to visit her. She recalls her aunt slipping away quietly and saying to her father, "I'd better go out first in case we upset her." Once, hearing her father's voice whispering outside the nearby door of the ward, she managed to point to the door and so make the nurse bring him in.

She has vivid recollections of the visits of the various doctors; she used to get upset because she imagined that they regarded her as a stubborn little girl when she did not answer them. She remembers the actual word "chorea" being mentioned. From something her father let fall in her hearing she realized that he thought (as indeed he did at one period) that she would not get better.

The screaming noises were her attempts to tell us something. For example, on Christmas Day she had no presents. She realized that this was to prevent her getting excited (in actual fact we never thought that she was "with us" sufficiently to appreciate the significance of the day), but she was none the less disappointed, and she says that she tried to tell the nurses that she wanted to go home by pointing to the window and trying to utter the word "home." They, alas, saw only a purposeless movement and heard a shrill cry. She remembers crying over headaches, which (she tells us) were brought on by sudden noises and also by the light over her bed. Added to her other troubles, her joints were very painful, and although the nurses hurt her when they moved her she could find no way to tell them.

Now, however, Ann is convalescent, and can tell us these things. This she does with an engaging grin. To us it is a salutary lesson that patients who are desperately ill may take in far more than the ordinary observer suspects.—I am, etc.,

Liverpool Royal Infirmary. J. STUART JONES.

Aftercare of the Hospital Patient

SIR,—I was naturally interested in the annotation in the *Journal* of Feb. 26 (p. 358). The Cardiff scheme, using health visitors, dated from 1944; it began with diabetes and afterwards was extended to peptic cases. As a municipal scheme it was convenient to start it with ex-municipal-hospital patients, but for diabetes the advantages are now available to patients from all hospitals in the area, and some are even referred by general practitioners. The work of the health visitors is supervised by a consultant physician from the diabetic clinic of the Cardiff United Hospitals, who is paid on a sessional basis by the local health authority.

On the suggestion of the Cardiff paediatrician, Dr. A. G. Watkins, the benefit of the follow-up is now to be conferred upon infants and children. Two health visitors, with special aptitude and liking for the work, will visit the children's wards and learn about difficult cases which have to be followed up afterwards. These two might either themselves follow up or explain the details to the district health visitors, who in turn will follow up. It is hoped that the introduction of this system will prevent the readmission to hospital of many cases, especially difficult infant feeding cases.

Only the "hold-up" over the consultant service generally has prevented the aftercare work in Cardiff through health visitors already including cardiac patients and asthmatic patients as well as the categories mentioned.

There is no conflict between health visitors and hospital almoners in Cardiff, but on principle I would take leave to doubt the ability of almoners anywhere to undertake some important aspects of the work. In dealing with diabetes the health visitor gives considerable technical instruction—e.g., as to use of syringes, testing urine, and diet. It is difficult to believe that anyone such as an almoner without the basic nursing training possessed by a health visitor could undertake this work, and if she cannot is it necessary to have her duplicate the visit of the health visitor just for "social case-work"?

In this age of clichés we are faced with yet another before which we are expected to fall back in awe. There is a mysterious "something" about this cliché which some use to assert a kind of superiority of the social-science diplomate over the better-experienced and far-longer-trained health visitor.—I am, etc.,

Cardiff. J. GREENWOOD WILSON.

Milk Standards

SIR,—Recent parliamentary debates and letters to the medical press have again drawn attention to the dangers still existing from the spread of bovine tuberculosis by milk. As far as I know, the general attitude of the medical profession, and one forcibly voiced by the British Medical Association, is that pasteurization provides sufficient safeguard to milk supplies. This is undoubtedly true as far as it goes, but it must be acknowledged that pasteurization is only a means by which risks to health resulting from earlier errors in production can be minimized. It has always seemed to me undesirable that the public should be expected to drink dead or devitalized microbes of any sort. In emergency, many have drunk previously contaminated water sterilized by boiling, but this is not a practice to be advocated except at such times.

There seems little doubt that the advocacy of pasteurization and its actual practice have seriously retarded fundamental improvements in the standards of milk production in the country, because the tendency has been to produce large quantities of indifferent quality subsequently rendered safe by pasteurization. It is disquieting that only 13.9% of the milk-producing cattle in this country are known to be tuberculosis-free; happily, the number is increasing. Somehow the idea of tuberculin testing of herds has not caught on in Great Britain to the extent it has in the United States of America where the possession of untested milking animals is unthinkable. In pre-war days there was a feeling that tuberculin-tested cattle only belonged to cranks or gentlemen farmers whatever the latter term means. Most farmers, naturally, were not interested in anything which raised their costs, with the public only interested in cheap food. Little attempt has been made to educate public opinion in the need for considering the quality of milk available and that it must be sold at an economic price. The mass of the population in Great Britain is, of course, so urban-minded that for many milk is something from a bottle, and whether it has a good fat content or is contaminated does not worry them, whereas in the United States, traditionally, the population is much better informed about such matters. The efforts by the Ministry of Agriculture to increase the number of licensed tuberculin-tested cattle and attested herds in Great Britain is to be welcomed, but I doubt whether this commendable effort will be as successful as it might be until the oft-quoted statement, "Of course, your doctors advocate pasteurization," can be denounced forcibly by positive action on the part of the British Medical Association to stimulate an increase in the number of tested animals.

In the advocacy of positive health—the modern theme dominating, or which should dominate, current medical

practice—much can be done to convince milk producers of the need for improvements in their technique. It is not enough to know that cows are tuberculin-tested and that milking stands are surrounded by a four-foot dado of cement, when udder cloths are roughly washed in water which may be little better than dilute liquid manure. In this matter of udder cleaning undue reliance is still placed on antiseptics, which may be useful provided they have time to act; how much better it would be if a point like this were more widely known.

In many matters finance still has to govern policy. If money be available much can be done to improve dairies and other buildings, many of which are a century or more old, which they look. They look old, and they have not been replaced because for the past seventy-odd years all farming—and this includes the production of dairy products—has been of no particular interest to the community as a whole; whether the present signs of a reawakening interest will be more than temporary time will show. Unrestricted imports of food damaged farming permanently in the past and may do so again. Whether present endeavours to re-establish British agriculture will be successful on a long-term basis and automatically raise the standard of milk production would seem to depend upon the farming community realizing that popular interest in them is deep-seated and not simply one of expediency. Memories of the past are long. Until all dairy cattle can be tested and culled it is obvious that during the transitional period pasteurization must continue. This should be looked upon purely as a temporary measure, to be discarded as rapidly as possible.—I am, etc.,

London, W.1. W. R. THROWER.

Temperature Recording

SIR,—Further to the very interesting article by Professor Alan Moncrieff and Dr. B. J. Hussey (Dec. 4, 1948, p. 972) and the ensuing correspondence, may I be allowed to add a few remarks which may be considered of practical interest?

My remarks concern that most awkward age for temperature recording—namely, from 1–3 years. The child is then too young to be trusted with a thermometer under the tongue and too old to tolerate a rectal thermometer with nonchalance (I have ignored the axillary and groin methods as being inaccurate and time-consuming). This age period incidentally provides the bulk of child patients in a busy general practice, and it is from time-saving considerations only, without, I maintain, sacrificing accuracy, that I put forward this method of temperature recording, which I have been using for the last few months.

The technique is quite simple. One directs the bulb of the thermometer gently along the floor of the right cheek between the gum margin and the cheek until the bulb can be felt protruding by a finger laid gently over the outer side of the cheek. The thermometer is steadied with the right hand, the bulb pressed into the buccal sulcus, and the mercury can be watched as it rises. The points I wish to make are as follows:

(1) If the child is feverish the mercury can be seen to rise within a *few seconds* only to its maximum. After all, one does not necessarily need to know the exact temperature to a tenth of a degree or so, but the state of illness of the child. The rapidity of the rise of the mercury gives this indication, together with one's other simultaneous clinical findings, such as the pulse rate and general appearance of the child.

(2) The child rarely, if ever, objects to this method. It never seems to taste the antiseptic in which the instrument is carried, as it does in the sublingual method. Any objection can usually be dispelled by telling the child to "smoke a cigarette like daddy does."

(3) The mouth can be gently closed by one's free left hand whilst the temperature is being taken.

(4) I have used this method now in several hundred cases and have never run the slightest risk of the instrument being bitten.

Of course this method would be unsuitable for the more leisurely atmosphere of a hospital ward, but I have found it an invaluable time-saver in the present measles epidemic in this town (when one is asked casually to see sometimes five or six children in one house), without in the least, I feel, leaving one with the impression that one's work has been inaccurate and that the patient has suffered thereby.—I am, etc.,

Southampton. S. R. SAUNDERS.

Obituary

JOHN McGIBBON, M.B., F.R.C.P.Ed., F.R.C.O.G.

Professor John McGibbon, who died suddenly at Crieff on March 5, had been professor of obstetrics at the University of Witwatersrand before being appointed to the chair of midwifery at St. Andrews University.

John McGibbon was born in Edinburgh in 1876, and graduated M.B., Ch.B. at Edinburgh University in 1898. It was intended that he should assist his father in carrying on a large general practice in the city with a view to taking over the practice at a later date. This intention was not fulfilled, for, after a period as house-surgeon at the Royal Maternity Hospital of Edinburgh, McGibbon became interested in midwifery and gynaecology, and when he later received a gynaecological and obstetrical appointment in the city he decided to give up general practice and devote himself entirely to this specialty. He was appointed to the chair of obstetrics at the University of Witwatersrand, in Johannesburg, in 1922, and in 1928 was recalled to Scotland to occupy the chair of midwifery at St. Andrews University. At the same time he became obstetrician and gynaecologist to Dundee Royal Infirmary. In the following year he became one of the foundation fellows of what was then the British College of Obstetricians and Gynaecologists. Unfortunately his tenure of the chair at St. Andrews was interrupted by ill-health, and he was unable to devote as much of his abundant energy to its duties as he would have liked. He did recover sufficiently, however, to carry on the duties of the chair for another two years after his formal retirement in 1938, so that arrangements could be made to appoint his successor.

Professor McGibbon was a most popular examiner both with colleagues and students and seemed thoroughly to enjoy taking part in examinations. After he had acted as an examiner at practically all the Scottish universities, and on finally retiring from the chair at St. Andrews, he applied for appointment as an examiner to the University of London and carried out this duty for a number of years. For the last few years Professor McGibbon had lived in Crieff, and he was not well enough to take part in medical activities or mix with his colleagues and friends in Edinburgh and Dundee.

He is survived by his widow, a daughter, and a son, who is one of the radiologists at the Royal Infirmary, Edinburgh. To all his family the sympathy of many friends and colleagues will be extended.

ETHEL VAUGHAN-SAWYER, M.D.

Dr. Ethel Vaughan-Sawyer, who died at Mount Vernon Hospital on March 9, was born in 1868 and was the daughter of Cedric Vaughan, J.P., of Millom, Cumberland. After early education at Lausanne and University College, London, she entered the Royal Free Hospital in 1891. She won many prizes as a student, and graduated M.B., B.S. in 1896, proceeding M.D. two years later. After working at Camberwell Infirmary as assistant medical officer, Dr. Vaughan was appointed pathologist to the Royal Free Hospital and worked there from 1899.

Mrs. Scharlieb, afterwards Dame Mary, was at that time senior gynaecological physician to the Royal Free Hospital and the first woman to hold such a position on the staff of a London teaching hospital. In 1902 Ethel Vaughan was appointed assistant physician for diseases of women and assistant obstetrician. When Mrs. Scharlieb retired in 1908 Miss Vaughan succeeded her and was also lecturer in gynaecology in the University of London until 1929, when she was made consulting gynaecologist to the Royal Free Hospital. On her marriage to Captain Henry Sawyer, of the Indian Army, Ethel Vaughan took the name of Vaughan-Sawyer. Her married life was extremely happy and she never ceased to mourn her husband's death in action in 1914. There was one daughter of the marriage, but unfortunately she died. An attack of glaucoma compelled Mrs. Vaughan-Sawyer's retirement from the hospital and from active surgery in 1928, and in spite of

remissions her eyesight gradually failed until she was completely blind for the last ten years of her life. She taught herself Braille and continued to live in her house in Harley Street until the last two years, which she spent in a home where she was happy and received every care.

Many generations of students of the Royal Free Hospital will remember Mrs. Vaughan-Sawyer. She was a vivid personality, an excellent diagnostician, and a meticulously careful surgeon. She was particularly successful in the performance of Wertheim's hysterectomy for cancer of the cervix. In those days "follow-up" clinics for cancer patients were relatively rare, but her cases were seen at regular intervals after operation. Mrs. Vaughan-Sawyer's kindness and generosity were unbounded, both to her patients and to her old students and residents whenever they needed help of any kind. Her great success both in hospital and private practice, apart from her surgical skill, was due to the great interest she took in the lives of her patients. "Tottie," as she was affectionately called, loved the pleasures of life—good food, good wine, an evening playing bridge, and, though often casually and always unfashionably dressed, she delighted in seeing people smartly and expensively attired. She was an entertaining conversationalist, with a characteristic chuckle.

In spite of her family griefs and her progressive ill-health, Dr. Vaughan-Sawyer still managed to enjoy the company of her many friends. Even within two weeks of her death from a recurrence of malignant disease, and while completely paraplegic, she was able to say with almost her old sparkle: "You know, I've had a wonderful life, and am still thrilled when I think about it." It is this aspect of her personality that will live longest in the memory of those who admired her so much.

A. W. WAKEFIELD, M.D.

Dr. Arthur Wakefield, who died at his home in Keswick on Feb. 23 at the age of 72, had led a life of stirring adventure and strenuous endeavour. He was born in Kendal in 1876, a son of the late William Wakefield, of the Wakefield and Crewdson banking house. He was educated at Sedbergh School and at Trinity College. At Cambridge he got a "half-blue" for cycling, boxed as a middleweight against Oxford, and rowed "head of the river." He served as a trooper throughout the South African War. In 1904, when he captained the London Hospital rugby team, he took the L.R.C.P. and M.R.C.S., and he won the United Hospitals heavyweight boxing championship. In that year, too, he put up a mountain-climbing record, ascending Sca Fell Pike, Helvellyn, Skiddaw, and most of the highest intervening peaks, in a little over 22 hours—a record which was not beaten until 1920. In 1905 he graduated M.B., B.C., proceeding M.D. in 1909.

From 1908 to 1914 Dr. Wakefield was medical officer to the Royal National Mission to Deep Sea Fishermen in Labrador and Newfoundland, working with the famous "Grenfell of Labrador." He was organizer and captain of the Labrador Unit of the Legion of Frontiersmen, and in the 1914–18 war he served in the Newfoundland Regiment, R.A.M.C., and was mentioned in dispatches. After the war there followed a spell as surgeon to the Canadian Pacific Railway. Finally, in 1923, he settled as a general practitioner in Keswick with his wife, now president of the National Council of Women. He was, among many other things, medical officer of the Keswick Home Guard during the recent war.

It is as a mountaineer that Dr. Wakefield will be best remembered. In common with many members of Everest expeditions, he learnt his climbing in Lakeland, and was initiated by the pioneer brothers, George and Ashley Abraham, of Keswick. With his outstanding rock-climbing ability, great physical strength, medical knowledge, good comradeship, courage, and dogged persistence, he was a most useful member of the 1922 Everest Expedition, when Finch and Geoffrey Bruce reached a height of 27,300 ft. and blazed the trail followed by later parties. He was a member of the Alpine Club, and in 1923–5 president of the Fell and Rock Climbing Club. Dr. Wakefield, although a man of great charm and friendliness, was a severe disciplinarian, deeply religious, and a strict sabbatarian. On one occasion the Abraham brothers induced him to join them one Sunday on an early and difficult ascent of the Devil's Kitchen in Wales. This he enjoyed vastly, but with some misgivings apparently, for when he said good night he remarked: "I am going to make my peace with my Maker, but I somehow feel that, under such temptation, He will not be deeply offended." Although many of his contemporaries have gone ahead, many still survive who have the happiest memories of his kindly and helpful friendship, his warm good nature, and his splendid example.

Dr. J. Macdonald writes: Dr. Wakefield was widely known and was held in respect and esteem by all who knew him. He was always ready to help and always giving of his best, sparing no effort. "No matter how strait the gate, how charged with punishment the scroll," he would go on where his duty lay. His unfailing comradeship endeared him as a friend, and his great courage and determination commanded respect. He was an active member of the B.M.A., being at one time chairman of the local branch and in 1934–5 president of the Border Counties Branch. He was a man of wide interests and extensive experience. Among local and other activities he was at one time president of the British Legion. Unfortunately his later years were marred by a crippling arthritis, but his magnificent spirit remained unimpaired. Undaunted by failing health, he pursued his course to the last, and died in the midst of his activities. Sincere sympathy is extended to his widow, two sons, and daughter.

Dr. GEORGE ALEXANDER DICKSON, West Lothian's oldest physician, died on Feb. 15, at the age of 77, after almost fifty years in practice in South Queensferry. Dr. Dickson graduated M.B., C.M. at Edinburgh University in 1894, and continued his studies in Vienna. He held resident posts in the Edinburgh City Hospital and the Rosslynlee Mental Hospital. After several assistantships he settled in South Queensferry, where he remained in active practice till only a few weeks before his death. He was a loyal and active member of the B.M.A., and was chairman of the Lothians Division from 1923 to 1925. His sound judgment and experience were valued by his colleagues at all the medical meetings he attended. He was a justice of the peace for the county of West Lothian, and in 1946 he was given the freedom of the Royal Burgh of South Queensferry in recognition of his public services. On the occasion of his jubilee in medicine, in 1944, he was presented with a testimonial and a silver salver from his colleagues. Dr. Dickson was highly respected by patients, fellow practitioners, and all who knew him for his kindly, genial disposition and his constant unselfishness and devotion to duty. To those who knew him more intimately he was a staunch friend, and he will be greatly missed in West Lothian. His wife died twelve years ago. He leaves a son and daughter, the latter a member of the medical profession, and to both of them the sympathy of all his colleagues will be extended.—A. S.

Medico-Legal

A HUSBAND'S SULKS

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

A recent unusual case on cruelty caused the Court of Appeal some trouble.[1] From the very early stages of an otherwise happy marriage a wife found that her husband was subject from time to time to fits of depression. He would remain morose, sullen, and silent, and would not speak to her sometimes for as long as ten days. This caused her distress and affected her health. The husband knew quite well that his attitude towards her in these moods had a bad effect, and the couple tried to co-operate to cure him, but in vain. At length she told him that unless his manner towards her improved there would have to be a separation. He agreed that he must try to do better, and for the rest of his leave from Germany he behaved very well, and the couple had one of their happiest times since marriage.

His next leave, six months later, started well but quickly deteriorated, and for the latter part of it he ignored her completely, even in the presence of other people. The judge found her story true, held that the facts amounted to cruelty, and granted her a divorce. The husband appealed to the Court of Appeal, which was constituted with the president of the Divorce

[1] *Lauder* v. *Lauder*, 1949, 1 All E.R. 76.

Court, Lord Merriman, at its head, and Mr. Justice Pearce, another divorce judge, as one of its members. The third member was Lord Justice Singleton, who disclaims wide experience of divorce matters.

Findings on Appeal

The president said that the trial judge had fully appreciated the necessity for the two essential elements in a charge of cruelty: something that could be called misconduct by the husband coupled with danger, actual or apprehended, to the mental health of the wife. There was abundant evidence to enable the judge to come to the conclusion that the cumulative effect of the husband's conduct was having a serious effect on the wife's nervous and emotional stability. Sulking was not a new ingredient in cruelty, said the president, although no case turning directly on it seemed to have been reported. More than once he had in the course of trying a divorce petition committed himself to the statement that he could imagine no course of conduct more calculated to be destructive of married life than persistent and deliberate sulking. To "send a wife to Coventry" for ten days on end certainly amounted to cruelty, and the suggestion that the husband's action was involuntary was sheer rubbish. When he was pulled up by the wife or her mother he would behave better for a few days. He was not unable to control his temperament, and many of these incidents were brought about by resistance of the wife to the imposition of his will on hers. He had caused her two miscarriages by bullying her by the threat of sulks into going to church when she did not feel well enough. The president therefore found that she should have her divorce.

Mr. Justice Pearce agreed. He had no doubt that the husband's conduct amounted to cruelty in law, and thought the trial judge had taken the fullest advantage of seeing and hearing the witnesses. Even assuming that the husband had no intention of being cruel, his intentional acts had amounted in the view of the trial judge to cruelty. It would be unfortunate if the court were to refuse its protection on the ground that the injury to the wife's health was caused only by the subtle weapon of sulking.

Lord Justice Singleton, on the other hand, saw no evidence that the husband was either tyrannical or domineering. He was not satisfied that there was a deliberate course of conduct of a kind to cause reasonable apprehension of danger to health. He thought there must be something more than moods, and that the husband, though inconsiderate at times, had not been guilty of cruelty in law as his lordship understood the meaning of the word. There were faults on both sides, and he thought she could have done more; they were both difficult people, and he did not think that the legislature, in the word "cruelty," had intended to include what had been proved in this case. The appeal was, however, decided by the view of the majority.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on Feb. 26 the following degrees were conferred:

D.M.—M. A. Partridge, A. P. Meiklejohn, G. Gordon, *J. A. L. Leeming.
B.M.—*V. J. E. Davies.

* In absence.

UNIVERSITY OF CAMBRIDGE

Dr. G. R. E. Naylor has been reappointed University Demonstrator in Pathology for five years from Oct. 1.

The *Cambridge University Reporter* dated March 9, 1949, contains a report of the Faculty Board of Medicine on the regulations for degrees in medicine and surgery. The Board recommends that the regulations (*Ordinances*, p. 374) be rescinded and replaced by the regulations set out in the schedule to its report, published in the same issue of the *Reporter*.

UNIVERSITY OF ABERDEEN

William Malcolm Millar, M.D., lecturer in mental health in the University, has been appointed to the Chair of Mental Health in succession to Professor D. R. MacCalman, now Nuffield Professor of Psychiatry in the University of Leeds.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of the Council of the College was held on March 10, with Lord Webb-Johnson, President, in the chair.

Hunterian Professorships were awarded to Professor C. F. M. Saint (South Africa) and Professor Robert I. Harris (Toronto).

Professor W. E. Gye was elected an emeritus professor of the College as from the date of his retirement from the Directorship of the Imperial Cancer Research Fund.

A Leverhulme Scholarship was awarded to Mr. W. J. Dempster, of the British Postgraduate Medical School.

Mr. L. E. C. Norbury was reappointed as the representative of the College on the Council of Queen's Institute of District Nursing.

Diplomas in Public Health were granted jointly with the Royal College of Physicians of London to P. L. Karney and D. F. van Zwanenberg.

The following hospitals were recognized in respect of the Resident Surgical post required of candidates for the Final Fellowship Examination: R.A.F. Hospital, Ely, 1st and 2nd House Surgeons (General); 1st and 2nd House Surgeons (Orthopaedic); R.A.F. Hospital, Halton, 1st and 2nd House Surgeons (General), 1st and 2nd House Surgeons (Orthopaedic); Warwick Hospital, Registrar to Ear, Nose, and Throat Department.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the final examination, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P.&S.Glas.:

Abd-El-Rahman Azzam, Elspeth V. Beveridge, Mahala M. Beveridge, A. Carlos, Elizabeth Carwardine, J. C. Cassaglia, S. H. Curry, S. B. Davies, I. M. Downie, K. A. H. Fermie, W. O'C. FitzPatrick, R. M. Gaze, J. Govan, J. G. Hart, Mary M. Hay, Lysbeth R. Hurwich, Margaret J. G. Jamieson, J. H. Kennedy, J. J. O'B. Lavery, J. Leonard, D. W. Lyon, G. J. McCann, Sushil Mallick, J. C. Marshall, H. P. P. Morris, J. S. Nelson, J. Ryan, S. Schlifka, J. G. Sheehy, I. Tandatnick, F. Whyte, H. N. R. Wilson, N. W. Wilson, M. Wotherspoon, J. C. Wright.

Medical Notes in Parliament

NATIONAL HEALTH SERVICE

Consultants and Specialists Awards Committee

Sir HUGH LUCAS-TOOTH on Feb. 28 asked the Minister of Health what remuneration he had in mind for the chairman and members of the National Awards Committee set up on the recommendation of the Spens Report on the remuneration of consultants and specialists.

Mr. BEVAN said that the chairman of the Awards Committee was being paid a salary of 3,000 guineas for the first year, 2,500 guineas for the second, and 2,000 guineas for the third. Those members of the committee who were retired received a fee of 7 guineas for each day given to the work of the committee.

Foreigners and Temporary Residents

Colonel STODDART-SCOTT inquired on March 10 whether it had been decided upon what principles doctors in the National Health Service were to be paid for the treatment of temporary residents, visitors, holidaymakers, foreigners, and patients not on the doctor's list.

Mr. BEVAN replied that he was still discussing with the profession the principles on which such payments should be made in future. The total amount of these payments depended on the number of persons involved and was a charge on the central pool for the remuneration of general medical practitioners. He had agreed with the profession that payment in respect of the period July 5 to Dec. 31, 1948, should broadly be on the same basis as under the National Health Insurance arrangements.

Answering a further question, Mr. Bevan said these payments in respect of the period July 5 to Dec. 31, 1948, would be made on March 31. Payments were necessarily made in arrears and payment in respect of the period Jan. 1 to March 31 this year would be made on June 30.

Diphtheria Immunization

In 1947 approximately 478,000 children under 5 and 111,000 from 5 to 14 received inoculations against diphtheria under local authority arrangements in England and Wales.

Returns from authorities in England and Wales for 1947 showed that 1,287 cases of diphtheria and 16 deaths occurred among immunized children, as compared with 2,654 cases and 182 deaths among children who were not immunized.

Petrol for Doctors.—Mr. NIALL MACPHERSON on March 3 asked the Minister of Fuel and Power the functions of British Medical Association liaison officers in relation to his department, and suggested that the applications of country doctors for more petrol were being refused. Mr. ROBENS replied that the liaison officers appointed by

the British Medical Association were available for consultation by the regional petroleum officer on any matter affecting an application by a doctor for an allowance of petrol. Doctors themselves could also ask the medical liaison officer to support their application. The appointments were unpaid and no cost fell on the Treasury. Regional petroleum officers had standing instructions to allow doctors sufficient petrol to meet their essential requirements. Mr. Robens was not aware that reasonable applications were being refused, but promised to review any cases brought to his notice by Mr. Macpherson. The regional petroleum officer had the advice of the medical liaison officer nominated by the British Medical Association. The standing instruction to regional petroleum officers was not to set any limit to the amount of petrol a doctor required in the legitimate work of looking after his patients. Mr. Robens added that a medical liaison officer of the standing appointed by the B.M.A. would know something of doctors' requirements and be a good adviser.

Doctors Redistributed.—Mr. BEVAN said on March 3, in answer to Mr. KEENAN, that the total number of general practitioners on the medical list at July 5, 1948, was 18,165; 661 other practitioners had been admitted since then and approximately the same number had left for a variety of reasons. He had no information on the average salaries earned by doctors in that period. Certain payments were made to doctors outside the National Health Service Act. More general practitioners were taking part in the scheme than the Government had estimated at the beginning. There was a surplus of doctors in some places, and as they redistributed themselves there ought to be adequate doctors for all.

EPIDEMIOLOGICAL NOTES

Influenza

There were 259 deaths in the great towns in the week ended March 5, compared with 251 in the previous week. Sunderland 7 (12) and South Shields 5 (6) had fewer deaths than in the preceding week, but there were more deaths in Bradford 11 (3), Leeds 8 (4), and Manchester 23 (16). Deaths in Greater London were about the same 89 (85). In each case the figure in parentheses is that for the preceding week. In certain places —for example, Salford and Leeds—the incidence has been high but the disease has been of a mild type. Nearly all the isolations of virus have been of virus A, which was prevalent on the Continent, but virus B has been isolated from material obtained from two outbreaks in public schools.

Discussion of Table

In *England and Wales* there were increases in the notifications of measles 553 and acute pneumonia 138. There were decreases in the incidence of scarlet fever 71 and dysentery 25.

The largest increases in the notifications of measles were Devonshire 197, Sussex 181, Staffordshire 138, Warwickshire 112, and Somerset 102; the largest decreases were Southampton 450, Lancashire 218, Yorkshire West Riding 210, and Gloucestershire 135. The only appreciable changes in the local incidence of scarlet fever were decreases in Lancashire 48 and Yorkshire West Riding 25. A small rise in the incidence of acute pneumonia was recorded in most areas of the country.

The decline in the notifications of dysentery was due to decreases in London from 29 to 11 and in Surrey from 12 to 1. Of the 79 cases of dysentery 41 were notified in Lancashire (Liverpool C.B. 24, Manchester C.B. 8, and Oldham C.B. 5).

In *Scotland* infectious diseases were less prevalent during the week. The only rise in notifications was 39 for measles; the falls included acute primary pneumonia 55, whooping-cough 14, and scarlet fever 12. Notifications of dysentery fell by 16 in Edinburgh, but there was a rise of 10 in Glasgow. The fall in the incidence of scarlet fever was contributed by the western area, while in the eastern and south-eastern areas a small rise was reported.

In *Eire* a decline of 31 in the notifications of measles and a rise of 20 for whooping-cough were reported. In Dublin C.B. a decrease was recorded in the notifications of measles 22, scarlet fever 12, and whooping-cough 10. In the country, excluding county boroughs, the notifications of whooping-cough rose from 9 to 39.

In *Northern Ireland* the notifications of whooping-cough increased by 50; the largest local rise was 31 in County Tyrone. Notifications of measles showed a decrease of 18 in County Antrim, and a rise of 12 in County Tyrone.

Week Ending March 5

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,189, whooping-cough 2,653, diphtheria 101, measles 18,619, acute pneumonia 1,500, cerebrospinal fever 33, acute poliomyelitis 9, dysentery 65, paratyphoid 5, and typhoid 4.

No. 8

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Feb. 26.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1949 (a)	(b)	(c)	(d)	(e)	1948 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	46	4	22	2	3	31	2	15	6	1
Deaths	2	—	—				—	1		
Diphtheria	119	13	25	3	5	173	13	38	11	8
Deaths	2	—	—	—	—	1	1	—	—	—
Dysentery	79	11	27	—	—	145	12	65	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	3	—	—	—	—	—	—	1	—	—
Deaths		—					—			
Erysipelas			23	9	5			46	8	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				33					21	
Deaths	34	3	7	5	2	59	8	10	5	1
Measles*	20,055	831	173	120	145	7,312	932	732	136	35
Deaths†			—	—	1			2	—	—
Ophthalmia neonatorum	59	3	11	1	1	47	1	9	—	—
Deaths										
Paratyphoid fever	7	—	3 (B)	—	—	3	—	—	—	(0)
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	1,607	131	57	13	24	732	37	8	12	3
Deaths (from influenza)‡	251	40	17	—	1	20	3	—	—	1
Pneumonia, primary			303	40				276	37	
Deaths	466	105		11	9	274	41		13	6
Polio-encephalitis, acute	4	—				1	—			
Deaths										
Poliomyelitis, acute	10	1	3	1	—	24	5	1	3	—
Deaths§	2	—				3	—			
Puerperal fever		—	8				—	10		1
Deaths										
Puerperal pyrexia‖	111	8	13	—	1	95	5	10	1	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,262	67	192	108	37	1,710	81	357	26	4
Deaths†			—	—	—			—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	4	—	1	—	1	—	—	1	15	
Deaths	1	—	—	—	—	—	—	—	1	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	3,045	195	245	83	117	2,631	158	47	37	
Deaths	8	—	2	1	—	8	—	—	—	
Deaths (0–1 year)	344	41	48	28	17	430	58	59	27	
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	6,682	1129	741	172	152	5,569	908	634	201	1
Annual death rate (per 1,000 persons living)			14·9	10·7				12·8	12·6	
Live births	7,921	1273	921	475	234	8,784	1493	1051	383	2
Annual rate per 1,000 persons living			18·5	29·4				21·2	24·0	
Stillbirths	185	25	25			215	20	34		
Rate per 1,000 total births (including stillborn)			26					31		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales, Eire, and Northern Ireland.

Medical News

Professor Grey Turner

Professor G. Grey Turner has been elected an Honorary Foreign Member of La Société de Chirurgie de Lyon.

Lord Boyd-Orr

Sir John Boyd Orr, M.D., F.R.S., who was raised to the Peerage in the New Year Honours, has assumed the name, style, and title of Baron Boyd-Orr of Brechin Mearn in the County of Angus.

West Herts and Watford Centenary Dinner

The West Herts Medical Society was formed at the Rose and Crown Hotel, Watford, on March 11, 1849. For many years the society remained essentially a dining club, but gradually, as its membership increased, meetings for the discussion of medical topics took pride of place and the dinners became of less importance. The Watford Medical Society was formed in 1896, and in 1912 the two societies amalgamated under the title "West Herts and Watford Medical Society." At the centenary dinner, which was held on Friday, March 11, the toast of the society was proposed by Dr. F. M. R. Walshe, F.R.S., and the president, Dr. J. W. C. Leech, replied. The health of the guests was proposed by Dr. F. J. Aldridge. Lord Moran, P.R.C.P., and Sir William Gilliatt, P.R.C.O.G., replied. Lord Webb-Johnson should have replied, but was unfortunately unable to attend the dinner. Among the many guests were Sir Lionel Whitby, President of the British Medical Association, and Dr. H. Guy Dain, Chairman of Council. In the course of the evening tribute was paid to the work of Dr. C. Herbert Hall, who was one of the founder members of the Watford Medical Society and its first honorary secretary. He has continued to act as honorary secretary for a period of 53 years.

Medical Society of London

The 169th anniversary dinner of the Medical Society of London was held on March 8, with the President, Dr. T. Jenner Hoskin, in the chair. In proposing the health of the Society Mr. Bernard Darwin, who was the principal guest, compared real medicine with golfing medicine, drawing the moral that one should not overdo the cure. In reply Dr. Jenner Hoskin said that the society had been founded in 1773, its membership being made up of 30 physicians, 30 surgeons, and 30 apothecaries. To begin with the society had found its presidents among physicians, but lately physicians and surgeons had alternated in this office. It had been in its present home at 11, Chandos Street, since 1871, and now had a well-furnished council chamber as a result of the treasurer's activities. In toasting the visitors, Mr. E. W. Riches welcomed Mr. Darwin as a clubable man. His great-great-grandfather, Erasmus Darwin, had lived at the time the Medical Society of London was founded. In responding for the visitors Lord Moran replied in a felicitous speech which caught the atmosphere of the evening.

Wills

Dr. Charles Henry Milburn, O.B.E., of Harrogate, left £13,076. Apart from a few small bequests, he left the residue to his daughter for life, and on her death half to King's College, Newcastle-upon-Tyne, for a scholarship in medical jurisprudence for students born in Northumberland, Durham, or Yorkshire, and half to the British Medical Association for medical jurisprudence and forensic medicine prizes for registered medical practitioners. Professor Bertram Arthur Lloyd, of Birmingham, left £19,808. He made a number of bequests, and left the residue in trust to his wife for life, with remainder as to half to the Royal College of Surgeons and half to the Cavendish Research Laboratory, Cambridge.

COMING EVENTS

Ophthalmological Congress

The annual congress of the Ophthalmological Society of the United Kingdom will be held at the Royal Society of Medicine (1, Wimpole Street, London, W.) on Thursday, Friday, and Saturday, March 31 and April 1 and 2. The programme is as follows: March 31, 9.45 a.m., presidential address by Mr. F. A. Juler, (1) "Some Points in the Operation for Acute Glaucoma" and (2) "Some Reflections on Refraction," followed by the presentation of the Bowman medals and a paper by Mr. D. N. Matthews on "The Technique of Plastic Operations in the Neighbourhood of the Orbit"; 11.30 a.m., Mr. J. R. Wheeler, "The Reduction of Intra-ocular Tension by Curare, Retrobulbar Procaine, and Di-isopropyl Fluorophosphate"; 12 noon, annual general meeting; 2 p.m., Dr. Macdonald Critchley, "The Problem of Awareness or Non-awareness of Visual Field Defects"; 2.30 p.m., Dr. Critchley, "Cerebral Metamorphopsia"; 3 p.m., Mr. Eugene Wolff, "Notes on Normal and Pathological Ocular Pigment"; 3.30 p.m., Dr. E. Hartmann, "The Clinical Estimation of Pressure in the Retinal Arteries"; 4 p.m., Dr. S. P. Meadows, "Internal Carotid Artery Aneurysms"; 7.30 for 8 p.m., annual dinner of the society at Grosvenor House, Park Lane, London, W. (tickets 30s. each, inclusive of gratuities but exclusive of wines). April 1, 9.30 a.m., discussion on "Corneal Grafting" to be opened by Professor A. Franceschetti, Mr. J. W. Tudor Thomas, Professor G. P. Sourdille, Mr. B. W. Rycroft, and Mr. D. P. Choyce; 2 p.m., pictorial demonstration of short cases. April 2, 9.30 a.m., Mr. W. J. Wellwood Ferguson and Dr. Alastair G. Macgregor, "Congenital Total Colour Blindness, with Otosclerosis and Hypertension as Associated Hereditary Abnormalities"; 10 a.m., Dr. A. C. Copper, "The Measurement of the Retrobulbar Resistance (Orbitonometry) in the Clinic"; 10.30 a.m., Dr. G. Karpe, "Clinical Electroretinography"; 11 a.m., Mr. J. Pike, "Some Problems in Ophthalmic Dispensing"; 11.30 a.m., Dr. J. Berkson, "Retinal Arteriolar Spasm in Toxaemia of Pregnancy"; 2.30 p.m., annual general meeting of the Faculty of Ophthalmologists at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C. Further information may be obtained from the honorary secretary, the Hon. G. J. O. Bridgeman, F.R.C.S., 45, Lincoln's Inn Fields, London, W.C.2.

Society of Anaesthetists of the South-western Region

The Society of Anaesthetists of the South-western Region has arranged meetings to be held at Taunton on April 1 and 2, and at Plymouth on July 1 and 2. Anaesthetists from other areas will be welcome, and those wishing to attend should communicate with the honorary secretary, Dr. G. L. Feneley, Avon Lodge, 8, Parry's Lane, Bristol, 9.

Reunion Dinner

A reunion dinner of C.M.F./M.E.F. physicians will be held at Simpson's Restaurant, 100, Strand, London, W.C., on Saturday, April 2, with Dr. E. R. Cullinan in the chair. All interested should communicate with the honorary secretary, Dr. Arthur Willcox, 66, Harley Street, London, W.1.

Chesterfield Medal Examination in Dermatology

The Chesterfield Medal examination in dermatology will be held at St. John's Hospital for Diseases of the Skin, 5, Lisle Street, London, W.C., on Monday, Tuesday, and Friday, April 4, 5, and 8. Full particulars may be obtained on application to the dean of the Institute of Dermatology at the hospital.

International Medical Congresses

A General Constituent Assembly for the foundation of the Permanent Council for the Co-ordination of International Congresses of Medical Sciences will be held in Brussels from April 4 to April 9. This Conference is sponsored jointly by Unesco and WHO. More than 50 representatives of various international medical organizations will attend the Conference, which will be presided over by Professor J. Maisin, to whom communications can be addressed at 141, Rue Belliard, Brussels.

Empire Rheumatism Council

The Empire Rheumatism Council has arranged a week-end course to be held at the Apothecaries' Hall, Black Friars Lane, Queen Victoria Street, London, E.C., on Friday, Saturday, and Sunday, April 8, 9, and 10, with the following programme: April 8, 4.30 p.m., Sir Adolphe Abrahams, "Rheumatism—A Symptom in Clinical Diagnosis"; 5.30 p.m., Dr. George Graham, "Gout." April 9, 10 a.m., Dr. W. S. C. Copeman, "Non-articular Rheumatism"; 11.15 a.m., Dr. Philip Ellman, "Rheumatoid Disease—Its Systemic Manifestations"; 2 p.m., Dr. Bernard Schlesinger, "Acute Rheumatism"; 3 p.m., Dr. Hugh Burt, "Spondylitis"; 4.30 p.m., Dr. J. J. R. Duthie, "Fundamental Principles in the Treatment of Arthritis." April 10, 10 a.m., Dr. F. S. Cooksey, "Physical Methods in the Treatment of Rheumatic Diseases"; 11.15 a.m., Mr. J. C. R. Hindenach, "Orthopaedic Aspects of the Rheumatic Diseases." The fee for the course is £2 2s., and entries (limited to 100) must reach the general secretary of the Council, Tavistock House North, Tavistock Square, London, W.C.1, at least one week before the course opens.

SOCIETIES AND LECTURES

Friday

BRITISH INSTITUTE OF RADIOLOGY.—(1) At Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C., March 18, 2.15 p.m., Joint meeting with Faculty of Radiologists and Radiological Section, Royal Society of Medicine. *"Tumours of the Kidney,"* by Professors R. A. Willis and A. S. Johnstone. (2) At 32, Welbeck Street, London, W., March 18, 5 p.m., Meeting of medical members. (3) At Royal Society of Medicine, 1, Wimpole Street, London, W., March 18, 8.15 p.m., Continuation of joint meeting. *"Tumours of the Kidney,"* by Messrs. Twistington Higgins, R. Ogier Ward, and Miss M. D. Snelling.

Monday

HUNTERIAN SOCIETY.—At Talbot Restaurant, 64, London Wall, E.C., March 21, 7 for 7.30 p.m. Dinner and discussion. "*The Treatment of Coronary Thrombosis*," to be opened by Dr. William Evans, Dr. Geoffrey Bourne, and Mr. George A. Mason.

PHYSICAL SOCIETY.—At Royal Institution, 21, Albemarle Street, London, W., March 21, 5 p.m. "*Experimental Studies in Thermal Convection*," Guthrie Lecture by Professor A. O. Rankine.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—March 21, 5 p.m. "*The Anatomy and Physiology of Bone—Part II.*" Arnott Demonstration by Dr. F. S. Gorrill.

Tuesday

CHADWICK TRUST.—At Westminster Medical School, 17, Horseferry Road, London, S.W., March 22, 4.30 p.m. "*A Health Service for Children*," Chadwick Public Lecture by Dr. Helen M. M. Mackay.

EUGENICS SOCIETY.—At Royal Society, Burlington House, Piccadilly, London, W., March 22, 5.30 p.m. "*Some Problems of Race*," by J. C. Trevor, M.A., B.Sc.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—March 22, 5 p.m. "*The Treatment of Varicose Conditions of the Lower Limb*," by Mr. A. K. Monro.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C., March 22, 3.45 p.m. "*The Propagation of Mouse Tumours by means of Dried Tissue*." Imperial Cancer Research Fund Lecture by Professor W. E. Gye.

ROYAL INSTITUTION OF GREAT BRITAIN, 21, Albemarle Street, London, W.—March 22, 5.15 p.m. "*The Production of Transuranic Elements, and the New Radioactive Decay Series*," by Professor H. J. Emeleus, D.Sc., F.R.S.

ROYAL PHOTOGRAPHIC SOCIETY, 16, Prince's Gate, London, S.W.—March 22, 7 p.m. "*Visual Aids in Paediatrics*," by Dr. Ronald C. MacKeith.

Wednesday

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—March 23, 5 p.m. "*The Results of Surgery in the Treatment of Breast Cancer*." Moynihan Lecture by Dr. Frank E. Adair.

ROYAL INSTITUTE OF PHILOSOPHY.—At Eugenics Theatre, University College, Gower Street, London, W.C., March 23, 7.30 p.m. "*The General Will and the Will of All*," by D. J. Allan, M.A.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE.—At 28, Portland Place, London, W., March 23, 3.30 p.m. "*The Social Significance of Geriatric Rehabilitation*," by Mr. L. Z. Cozin.

SOCIETY OF CHEMICAL INDUSTRY: FOOD GROUP.—At Gas Industry House (No. 3 Room), 1, Grosvenor Place, London, S.W., March 23, 6.15 p.m. Meeting of Nutrition Panel. "*The Effect of Non-Protein Calories on the Utilization of Proteins*," by Professor J. Beattie.

Thursday

DEWSBURY: STAINCLIFFE GENERAL HOSPITAL.—March 24, 9 p.m. "*The Training of a Doctor*," by Professor E. F. Finch.

INSTITUTE OF SOCIOLOGY.—At Royal Institute of British Architects, Portland Place, London, W., March 24, 5.30 p.m. "*The Relations Between Anthropology, Psychology, and Sociology*," by Professor T. H. Pear.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—March 24, 5 p.m. "*Infra-red Photographic Studies of the Superficial Veins in the Female and their Clinical Application.*" Arris and Gale Lecture by Mr. Kenneth Bowes.

Friday

BIOCHEMICAL SOCIETY.—At Department of Biochemistry, University College, Gower Street, London, W.C., March 25, 11 a.m. Annual general meeting. Papers will be read.

CAMBRIDGE MEDICAL SOCIETY.—At Addenbrooke's Hospital, Cambridge, March 25, 2.30 p.m. "*Antenatal Care—Its Use and Limitations*." by Dr. C. W. Walker.

GRANTHAM JOINT INDUSTRIAL COUNCIL.—At Conference Hall, Messrs. Aveling-Barford, March 25, 6.45 p.m. "*Chest Radiography in Industry*," by Dr. Benyon.

KENT AND CANTERBURY HOSPITAL, Canterbury.—March 25, 8 p.m. Clinical meeting.

LONDON CHEST HOSPITAL, Victoria Park, E.—March 25, 5 p.m. "*Indications for Bronchoscopy in Chest Diseases*," by Dr. H. V. Morlock.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos Street, London, W.—March 25, 8 p.m. "*Some Aspects of Congenital Syphilis*," by Dr. David Nabarro.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, 9, Queen Street, Edinburgh.—March 25, 5 p.m. George Alexander Gibson Lecture by Dr. Ian G. W. Hill: "*Multiple Lead Electrocardiograms: A Review.*"

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—March 25, 5 p.m. "*Pathological Anatomy of Certain Forms of Lumbar Fibrositis and the Role of Surgery in its Treatment.*" Hunterian Lecture by Professor W. S. C. Copeman.

ROYAL SANITARY INSTITUTE.—At College of Technology, Howard Street, Rotherham, March 25, 10 a.m. "*Industrial Medicine*" and "*Industrial Welfare.*" Discussions to be opened by Dr. R. A. Trevethick and Mr. D. R. B. Burdass.

Saturday

ST. STEPHEN'S HOSPITAL (RHEUMATISM UNIT), 369, Fulham Road, Chelsea, S.W.—March 26, 10 a.m., "*Aetiology of Acute Rheumatism.*" Introductory Address by Professor Bruce Perry. 11 a.m., "*Modern Conception of the Aetiology and Classification of the Chronic Rheumatic Diseases*," by Dr. Philip Ellman. 12 noon, "*Organization of a Rheumatism Unit, with Special Reference to the Management of Rheumatoid Arthritis*," by Dr. Francis Bach. 2 p.m., *Ward Round and Demonstration of Methods of Physical Treatment, Injection, and Plaster Technique*, by Dr. Bach. 3 p.m., "*Social Welfare, Dietetics, Occupational Therapy, and Vocational Guidance*," by Dr. Bach and others. 4.15 p.m., "*Clinical Pathology in the Rheumatic Diseases*," by Dr. A. G. Signy. 5.15 p.m., "*The Radiological Diagnosis of Arthritis.*" Lantern Lecture by Dr. Grace Batten.

Sunday

ST. STEPHEN'S HOSPITAL (RHEUMATISM UNIT), 369, Fulham Road, Chelsea, S.W.—10 a.m., *Ward Round with Demonstration of Cases*, by Dr. Philip Ellman and others. 11.15 a.m., (1) "*Problem in Differential Diagnosis*," (2) "*Drug Treatment in the Rheumatic Diseases.*" Lectures by Dr. Ellman. 2 p.m., (1) "*Orthopaedic Aspects of Rheumatic Disease and the Prevention and Treatment of Deformities*," (2) *Demonstration of Cases and Treatment by Manipulation* (if cases are available), by Mr. Timbrell Fisher. 3.30 p.m., "*Radiotherapy in the Treatment of the Rheumatic Diseases*," by Dr. Margaret Snelling. 4.30 p.m., "*Pain—'Neuritis' and Referred*," by Dr. Blake Pritchard. 5.15 p.m., "*Psychiatric Factors in the Chronic Rheumatic Diseases*," by Dr. David Shaw.

APPOINTMENTS

Dr. Lawrence Wylie Fitzmaurice, O.B.E., has been appointed an Official Member of the Legislative Council of the Island of Jamaica.

BRAMLEY, G. F., M.D., D.P.H., County Medical Officer and School Medical Officer, Gloucestershire County Council.

FULHAM HOSPITAL, St. Dunstan's Road, Hammersmith, W.—*Junior Anaesthetic Registrar*, S. Mehlman, M.D. *House Surgeon*, Frances Morley, M.B., B.Ch., B.A.O.

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UNITED CARDIFF HOSPITALS.—*Physician in charge of the Department of Physical Medicine*, K. N. Lloyd, M.B., B.S., M.R.C.P. *Assistant Radiotherapist to the United Cardiff Hospitals*, A. W. O'Farrell, M.B., B.Ch., D.P.H.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Aronson.—On March 7, 1949, in London, to the wife of Dr. R. P. Aronson, M.R.C.P., a daughter.

Collinson.—On March 10, 1949, at Rotherham Nursing Home, to Desne (née Service), wife of Dr. Peter Collinson, a son.

Derrett.—On March 3, 1949, at Whitehaven and West Cumberland Hospital, to Pearl (née Penrith), M.B., B.S., wife of Rev. L. J. Derrett, a second son.

Drennan.—On March 7, 1949, at Lyme Regis Hospital, to Sally (née Woodford) and Dr. D. H. Drennan, Newlands, Charmouth, a son—Patrick Charles.

MARRIAGE

Perera—McKee.—On Feb. 26, 1949, at St. Aidan's Church, Sheffield, John Kenneth Percival Perera, B.A., M.B., B.Chir., Lieutenant R.A.M.C., eldest son of Dr. and Mrs. J. A. P. Perera, Sheffield, and Kathleen, daughter of Mr. and Mrs. R. J. McKee, Ballysallagh, Newtownards, Co. Down, N. Ireland.

DEATHS

Cadell.—Recently, Nevil Pottow Cadell, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., of Foxlease, Keymer, Hassocks, Sussex, aged 88.

Cole.—On Feb. 28, 1949, at Albany, Georgia, U.S.A., Thomas Matthew Cole, L.R.C.P.&S.Ed., L.R.F.P.S.Glas.

Copestone.—On Feb. 28, 1949, at Le Chalet, Gorey, Jersey, William Drake Copestone, B.Ch., aged 69.

Davies.—Recently, Katharine Charis Davies, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., of Upper Northgate Street, Chester.

French.—On March 5, 1949, at Ranmore, Burgh Heath, Surrey, Ronald Edgar French, M.D.

Ker-Gibson.—On March 3, 1949, at Cambridge Military Hospital, Aldershot, Arthur William Ker-Gibson, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., Lieutenant-Colonel R.A.M.C., retired.

Lang.—On March 7, 1949, at Marchwood, Bathgate, West Lothian, John Finlayson Lang, M.D.

McGibbon.—On March 5, 1949, at Medwyn, Sauchie Road, Crieff, John McGibbon, M.B., Ch.B., F.R.C.P.Ed., F.R.C.O.G., Emeritus Professor of Midwifery and Gynaecology, Dundee Medical School, University of St. Andrews.

Meade.—On March 5, 1949, at a Harrogate nursing home, Warren Meade, M.R.C.S., L.R.C.P., formerly of Southsea, aged 74.

Pearson.—On March 2, 1949, at Hitchin Hospital, Beatrice Mary Pearson (née Knowles), M.D., aged 76.

Slater.—On March 9, 1949, at Overdale, Dean Row, Wilmslow, Cheshire, Harry Slater, M.B., Ch.B.

West.—On March 6, 1949, at Fleet, Hampshire, John Weir West, C.B., C.M.G., C.B.E., M.Ch., LL.D., Major-General, late R.A.M.C.

Wynne.—On March 7, 1949, at Melai, Northiam, Sussex, Walter Wynne, M.B., C.M., aged 81.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Pertussis Prophylaxis and Treatment

Q.—*What are the current views on the prophylaxis of pertussis by means of: (a) pertussis vaccine; (b) combined diphtheria and pertussis vaccine; (c) gamma globulin prepared from hyperimmune serum? My experience of (a) has been unsatisfactory, and I feel that something more active should be available for treatment of this condition, particularly in infancy. If (b) is reliable, should it not be made available at child-welfare clinics? In my area no mention of the combined therapy has been made at the local clinic.*

A.—(*a*) Distinction must be made between the use of pertussis vaccine for the protection of a susceptible child and for the treatment of a case. Prophylactic injections of pertussis vaccine in young children have given variable results, probably because of variation in antigenic potency, which until recently could not be assayed in a suitable experimental animal as, for example, diphtheria toxoid is. Lately intranasal instillation or intracerebral inoculation has proved suitable for infecting mice with relatively small doses of *Haemophilus pertussis*, and it is hoped that assessment of the protective value of pertussis vaccine in mice may give some guidance to its prophylactic value in children. Pertussis vaccine given early in the infection in small doses at frequent intervals has been claimed, particularly by Danish doctors, to abort or ameliorate an attack of pertussis. Injections of vaccine later in the disease have no beneficial effect and may even aggravate the condition.

(*b*) When combined, diphtheria toxoid and pertussis vaccine produce an antibody response as good as, or better than, the reagents used singly. If both are good antigens, combined vaccination has obvious administrative advantages. Unfortunately there is still uncertainty about the efficacy of pertussis vaccine, and the combination of a good and a poor antigen might bring the good antigen into disrepute. Until, therefore, we are satisfied that pertussis vaccine will give reasonably good protection it may be wiser to use these two prophylactics separately. Another difficulty is that protection against pertussis should be given as early in infancy as possible, say at 2 to 3 months of age, since the infection is not uncommon and often severe in the first year of life. Diphtheria, on the other hand, is relatively rare in infants, so that diphtheria immunization is usually given at 9 to 12 months, when the child's antibody response seems to be better than in the first few months of life. Combined diphtheria toxoid and pertussis vaccine is available commercially, but the decision about its use in child-welfare clinics rests with the medical officer of health and his health committee.

(*c*) Gamma globulin prepared from hyperimmune serum is not available in this country, but American experience with large repeated doses (two or three injections of 20 ml.) of unconcentrated hyperimmune serum suggests that it is reasonably effective in protecting household contacts intimately exposed to infection.

Konsuloff Pregnancy Test

Q.—*Can you give me any information about the Konsuloff test for pregnancy? I am not interested in precise details of the technique, but would like to know the species of frog used and the site of injection; also the physiological explanation of the relation of the pituitary to skin colour, and if this has any counterpart in the human.*

A.—The test was first described in 1934 by Konsuloff,[1] of Sofia, who found that the melanophore hormone is increased in amount in pregnancy and excreted in the urine. In his original experiments he used *Melanostomus*, the urine being added to the water in the tank and absorbed through the fish's gills. A darkening of colour was noticed in twenty minutes, but as the fish themselves produce a melanophore hormone the results were unreliable. *Rana esculenta* were used for subsequent experiments. After being submitted to hypophysectomy, the frog is allowed to recover for two weeks, and may then be used repeatedly for testing. Injection of 2.5 ml. of urine is made into the dorsal lymph sac; a control frog is given an injection of urine from a non-pregnant woman. A maximum olive-green colour with dark-brown flecks is obtained in two hours. In a later paper Konsuloff[2] concludes that the test is diagnostic for pregnancy.

Zondek[3] isolated a melanophoric hormone from the intermediate lobe of the pituitary. This hormone, which he called intermedin, stimulates the expansion of chromophores in cold-blooded animals, but appears not to have a corresponding effect in man. The adrenaline content of the adrenal may be reduced by intermedin, but this finding has been doubted. It should be added that Zondek failed to confirm that there is an increase in the amount of this hormone in the urine during pregnancy.

REFERENCES

1 Konsuloff, S. (1934a). *Klin. Wschr.*, **13**, 490.
2 —— (1934b). Ibid., **13**, 776.
3 Zondek, B. (1935). *Glandular Physiology and Therapy*, p. 132, American Medical Association.

Undulant Fever and Milk Regulations

Q.—*A case of undulant fever has recently occurred in this district, and the patient is supplied with milk from the same herd as is my household. At present all our milk is being boiled. Should we take any other precautions? Is the public health authority charged with any duties in connexion with the herd?*

A.—The inquirer should certainly continue to boil the milk until he hears that it is being pasteurized. Under Article 18 of the Milk and Dairies Regulations the local medical officer of health has power to stop the sale of milk if it has caused illness in man or is known to be infected. Unfortunately it is difficult to prove that any one case was due to a particular supply, and it takes several weeks to prove that any particular sample was infected; also the intermittency of the disease in cattle sometimes results in a series of negative samples being obtained following strong suspicion of infectivity. If the local authority is unable to prove its case it may be required to pay a farmer or dairyman full compensation for his losses. The effect is, in practice, that it is very difficult to stop a milk supply, however strongly suspected of causing undulant fever in man, if the farmer or dairyman is not willing voluntarily to do this or to arrange for pasteurization.

Cup Arthroplasty

Q.—*Is the operation of arthroplasty for osteoarthritis of the hip, with the use of a "cup," now considered worth while? If it is successful, how long is it likely to remain so and in what proportion of cases? In those cases in which the improvement is not maintained, what is likely to happen, and in how many years?*

A.—Experience has shown that in carefully selected cases the operation of "cup" or "mould" arthroplasty is well worth while. One factor that is essential to success is the full and intelligent co-operation of the patient in carrying out the arduous course of post-operative exercises, which calls for a high degree of pertinacity. Similarly, the surgeon must be prepared to exercise a close personal supervision during all stages of the treatment. Patients who are grossly overweight, flabby, or excitable are unsuitable subjects for the operation. A further factor that has an important bearing on the prognosis is the nature of the disability for which treatment is sought: in osteoarthritis of degenerative or traumatic origin the outlook is good; but in "infective" conditions, such as ankylosing spondylitis and rheumatoid arthritis, it is poor. In brief, the type of case in which cup arthroplasty achieves its greatest usefulness is that of bilateral osteoarthritis of the hips in an otherwise vigorous, intelligent, and co-operative patient.

When the operation is successful there are grounds for hoping that the result will be lasting; but our knowledge on this point will not be complete until really long-term reviews of large series of operations become available. In the most favourable cases steady improvement continues for two years or more, and later deterioration does not occur. Satisfactory function is

known to have been maintained for over ten years. But good results are, unfortunately, not to be expected in every case—perhaps in not much more than two-thirds of them at the present time, taken by and large. Early failure may be due to inadequate surgical technique, inefficient after-treatment, or lack of co-operation by the patient. Unsatisfactory late results may be associated with persistent pain or with progressive decrease in the range of movement. Again, this may sometimes be attributed to errors of technique; but other factors, not completely under the control of the surgeon, may be responsible; thus in ankylosing spondylitis re-ankylosis round the cup has often occurred, and even in more favourable conditions, such as osteoarthritis, there may be much new bone formation which limits movement. In other cases there has been subluxation of the cup, or occasionally absorption of the femoral neck with "settling" of the cup. In most of the unsuccessful results evidence of failure has been present at a relatively early stage, certainly within the first two years.

Falling Hair

Q.—*(a) Are female glandular preparations ever beneficial in the treatment of falling hair of the scalp? If so, how are they given? (b) Is oestrogen of any use in the treatment of premature loss of hair in otherwise healthy young men? If so, how is it administered, and are there any contraindications?*

A.—(*a*) From an endocrinological point of view we have the following basic evidence. Loss of hair of the scalp occurs normally in a large proportion of virile men in the third and fourth decades, or later, and it also occurs in virilism in females, when there is a known excess of androgens, from which it is concluded that androgens increase facial and body hair but decrease scalp hair. On the other hand, eunuchs and eunuchoids tend to retain their scalp hair throughout life. In Simmonds's disease in women, in which there is a great decrease in androgens and oestrogens, and the hair becomes thin and loses its lustre and colour, oestrogens are potent in restoring the more normal condition of the scalp hair (Simpson, S. L., *Proc. R. Soc. Med.*, 1948, **12**, 192). Oestrogens may be given by mouth, injection, or implantation, and can be used by inunction. Scalp hair is also lost in myxoedema and restored by thyroid. The writer has no experience of the use of female glandular preparations in idiopathic baldness in the absence of endocrinopathy. They are not effective in alopecia.

(*b*) The remarks in (*a*) above are applicable to this question, and the probable answer is in the negative. The effect of oestrogens in adequate dosage in the male is to produce involution or atrophy of the testes, loss of libido, and gynaecomastia. These effects are spontaneously reversible if therapy is not unduly prolonged. Their production is justified in the treatment of a condition such as carcinoma of the prostate.

Stilboestrol and Dienoestrol

Q.—*What are the inorganic constituents in tablets of stilboestrol and of dienoestrol?*

A.—In tablets of stilboestrol and of dienoestrol there are no inorganic constituents. Some lactose is, however, usually present as a diluent.

Retroversion of the Uterus

Q.—*What treatment is recommended for a 27-year-old multipara with a retroverted uterus? If there are no symptoms, is it advisable to leave the condition untreated and warn the patient to report immediately she becomes pregnant?*

A.—No treatment is indicated if the patient is free from symptoms, but in the event of her becoming pregnant she should be asked to return for examination before the twelfth week. This is to make sure that the uterus corrects its position spontaneously; if it has not done so by the tenth to twelfth week it should be manipulated into anteversion and maintained in that position by a suitable pessary. Some authorities say that, provided the patient never lets her bladder get overfilled, the uterus always corrects itself and there is no need for any treatment even in pregnancy. Nevertheless, impaction does occur, and there is a good deal of evidence that abortion is more likely, so it seems wise to take no chances, particularly as restoring the position of the uterus at the tenth week is such an easy manœuvre.

Subarachnoid Haemorrhage

Q.—*Some months ago a female patient had a subarachnoid haemorrhage from which she recovered. It has now been suggested that she should submit to a tying-off of the artery. Is this operation often undertaken, which artery is most often concerned, and what are the results?*

A.—In the absence of gross cardiovascular disease, subarachnoid haemorrhage is most frequently due to a congenital intracranial aneurysm. Before carotid ligation is undertaken the case should be investigated by carotid angiography on each side. If the angiograms show no lesion there are several possibilities: (1) there is no aneurysm; (2) there is an aneurysm which is not fed by the internal carotid artery (for example, an aneurysm of the vertebral or basilar artery or one of their branches); (3) there is an aneurysm on the internal carotid system which has filled with clot. If the angiograms reveal an aneurysm and it is already eight weeks or more since the original subarachnoid haemorrhage, the risk of further intracranial haemorrhage is probably about 20%, though the figures on which this estimate is based are not large. If the aneurysm lies below the level of the anterior clinoid processes it is best treated by carotid ligation after an angiographic test has demonstrated that both cerebral hemispheres can be adequately supplied from the carotid system of the opposite side. It is safer to ligate the common carotid than the internal carotid, though in patients in the younger age groups in whom angiography has demonstrated an adequate collateral circulation from the opposite side the latter operation carries little risk. So far as is known to date carotid ligation is effective in preventing further attacks of haemorrhage. In some cases the angiograms will show not an aneurysm but an angiomatous malformation of the central hemisphere as the cause of the subarachnoid haemorrhage. For this condition carotid ligation is useless.

Boeck's Sarcoidosis

Q.—*What are the microscopical appearances of lymph nodes affected with Boeck's sarcoidosis, and what are the prognosis and treatment in this condition?*

A.—There is usually a well-defined mass of endothelioid cells with little or no tendency to caseation or calcification and few or no giant cells and no surrounding reaction. A diagnosis cannot, however, be made on histological appearances alone. Treatment is by calciferol in a dosage of 100,000 to 150,000 i.u. daily over long periods, but care must be exercised and biochemical control is desirable. Disturbances of calcium metabolism and of renal function may occur. Prognosis is good; in the majority of cases the disease resolves or becomes stationary.

NOTES AND COMMENTS

Home-cured Tobacco and Amblyopia.—Dr. A. E. BURROUGHS (Oswestry) writes: With reference to the question headed "Home-cured Tobacco and Amblyopia" ("Any Questions?" Jan. 22, p. 163), most of the tobacco amblyopic patients I have seen in a long ophthalmic experience have been pipe smokers over 60 years of age, and retired—therefore having time on their hands, and not much to do, so smoking to excess. I have not seen more than two cases of amblyopia in men smoking only cigars. With regard to home-cured tobacco, the midriffs of the leaves should always be removed, and if the dried leaves be then soaked in several changes of water nearly all the nicotine is dissolved out. This soaking does not affect the taste of the tobacco.

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